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Wages:	
Carpenters	70 cents a day
Barbers	3½ cents a shave
Tailors	42 cents a day
Lodging for a night	5 cents

"Dinners" at taverns for travelers (not soldiers) of boiled and "roast meat, with other articles equivalent, exclusive of wine," 21 cents.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

March 10, 1951

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Published by
TELEPHONY PUBLISHING CORP.

Vol. 140, No. 10. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 15 cents per copy (except special issues). Subscription $3.00 per year U. S. and Countries in U. S. Spanish Postal Zone; $4 Canada; $5 Other Countries. Entered as second class matter at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

Taft-Hartley law, pronounced by labor as a "slave labor law," basis for U.S. Supreme Court's ruling invalidating Wisconsin public utility anti-strike law. REA seeks more telephone loan funds. NPA calls meeting of communication wire manufacturers.

"Slave Labor" Law Protects Utility Strikers

ONE of the most ironic developments, in a whole year of topsy-turvy events in Washington, was the unveiling of the Taft-Hartley Act as the only thing which stands between the right of public utility workers to go out on strike, and state legislation attempting to prevent them from doing so. This is the same Taft-Hartley Act which was being denounced four years ago (and ever since, for that matter) by some labor union leaders as the Slave Labor Act. Yet, if it were not for the Taft-Hartley Act, as it is presently written on the statute books, some public utility workers in Wisconsin, and in about a dozen other states, might be today feeling the discipline of anti-strike laws, directly aimed at their industrial occupations.

All this came about in the U.S. Supreme Court decision, handed down Feb. 26, invalidating the Wisconsin public utility anti-strike law. The case was taken up by two different labor union groups, an AFL streetcar and bus drivers union in Milwaukee, and a gas utility workers union in the same city.

The court's decision was 6 to 3, with Chief Justice Vinson handing down the majority's decision. The basic trouble with the Wisconsin law, said the Chief Justice, was that it actually attempted to *outlaw* strikes by utility workers. The Wisconsin statute provides for compulsory arbitration of public utility labor disputes but forbids strikes during the process.

Other states—Florida, Indiana, Kansas, Nebraska, New Jersey, and Pennsylvania—have similar statutes. And probably they are all dead letters by now—for purposes of practical enforcement. There seem to be some doubts about a few other states' anti-strike laws affecting public utilities, which defer, but which do not directly prohibit, strikes. These are state laws which follow the so-called "Virginia" pattern.

From cursory reading of state laws (but don't hold it against this correspondent if slips are made, because nobody is paying him high legal fees for exhaustive analysis), the utility anti-strike statutes of Massachusetts, Michigan and North Dakota seem to fall into the Virginia pattern. In other words, the unions would probably have to take another test up to the higher court before the Virginia type of law would be knocked out—if it is ever knocked out at all. State officials in Virginia, from the governor on down, are standing pat on their law and intent to enforce it.

But the Wisconsin type of statute was definitely torpedoed by the U.S. Supreme Court—as long as the Taft-Hartley Act stays the way it is, in the United States statutory code. The Wisconsin decision, in a nutshell, voided the state law because it "conflicts" with the established federal policy for regulating interstate labor disputes. Of course the federal policy is none other than the Taft-Hartley Act, which recognizes and protects the right to strike, although it does impose certain limited restrictions on strikes which would cause a national emergency. Any substantial public utility strike, such as has threatened the telephone industry from time to time, would certainly fall under this class.

The federal law requires that such strikes be held up—upon direction of the President—for a cooling off period while a certain federal mediation or fact-finding machinery gets into motion. But at the end of this cooling off period, the right of the utility workers to strike is preserved. The Wisconsin law was more forthright. It purported to block such strikes from the very outset. And that seemed to be the fatal error in the Wisconsin law, according to the high court majority.

All this may seem like mere quibbling to the layman. But evidently the difference between the Taft-Hartley law and the Wisconsin law was viewed by Chief Justice Vinson as a basic "conflict in policy." And so, the court majority followed the well-known rule that where Congress has exercised "full and exclusive power over interstate commerce" the states may not impose contrary regulations of their own.

The minority (Frankfurter, Burton, and Minton) pointed to another rule: A state law can be upset only if it cannot be reconciled with federal statutes. The minority insists that no actual conflict exists and that Congress did not intend "to leave states helpless in meeting local situations when Congress restricted national intervention to national emergencies."

Telephone companies will be interested in the majority's view on the danger of socialization, through government seizure to prevent strikes. The Vinson opinion quotes Senator Taft (R., Ohio), co-author of the federal statute, to the effect that if strike seizures "begin with public utilities," such law might lead to "complete socialization of our economy." As matters now stand, the limited provisions in the Taft-Hartley Act, which postpone but do not outlaw utility strikes, seem to bar all outright anti-strike state laws.

Who Took the "Interstate" Out of "Commerce"?

So where do we go from here? That is what a number of state officials are worrying about in New Jersey, Pennsylvania, Indiana, etc. Obviously, if steps have to be taken to prevent public utility strikes, the move will have to be made by Congress.

What could Congress do? It could take two somewhat contrary approaches to remedy the situation, if it

decides that anything ought to be done at all.

First, the federal government could adopt, as its own, the policy of outlawing public utility strikes. That would make it perfectly all right for states to do the same thing. But politics being what they are, it is hard to see this administration approving any such restrictive federal statute.

The other, and perhaps more plausible way, would be for the federal government to withdraw from the field of strike regulation for public utilities. This would take the form of an amendment, to the Taft-Hartley Act, expressly reserving to the states the right to regulate local labor disputes which threatened the stoppages of vital utility services, even though they "affect" so-called interstate commerce.

There is precedent for such an approach right in the Communications Act of 1934, under which the federal government exempts local exchange telephone rate regulation from the jurisdiction of the Federal Communications Commission, even though such local exchange operations happen to flow across state boundaries.

This writer talked with several congressmen and he gets the impression that at least one Wisconsin member has in mind dropping such a bill in the hopper, in the near future. It would probably gain some support from those congressmen who hail from states which have laws falling under the shadow of the Wisconsin decision. It would also probably get some support from other congressmen. But the labor union opposition is still pretty potent. Because of other complications (to be discussed later), the outlook for piecemeal revision of the Taft-Hartley Act in this session of Congress is very doubtful, if not pitch black.

The real difficulty, which shows up very clearly in the Wisconsin decision, is the steady drift towards federalized regulation, which the present high court has been approving with almost rubber-stamp regularity over the past decade or more. The old constitutional concept of what amounts to interstate commerce has been stretched like a tired rubber band to the point where it isn't holding anything, as far as check or balance is concerned.

Under a series of U.S. Supreme Court decisions, the little boy who shines your shoes in a railway station may be engaged in interstate commerce. The farmer who dams up a mill pond on his own land may find himself receiving questionnaires from Washington about activity "affecting" a tributary to a "navigable stream" (under the Interstate Commerce Clause) which has never floated anything drawing more water than a hard shelled crab.

As a result of this series of supreme court decisions, we have reached the absurd point where the very same public utility company that has been held to be engaged in "intrastate commerce" for purposes of rate regulation by a state public service commission, is also held to be engaged (when viewed through a federal spyglass) in "interstate commerce" for purposes of labor regulation by the National Labor Relations Board. (For those interested, the reference here is to the Consolidated Edison Co. of New York, Inc.)

As long as the U.S. Supreme Court is willing to stand by and let the federal government grab regulatory control of almost any substantial business, on the basis of tortured construction of "interstate commerce," there is little the states can do about regulating their own affairs in coping with local labor problems. The Wisconsin decision is simply the end result of a long series; and the states are beginning to reap the strange fruit of federal infiltration which was started years ago.

REA Allocated $322,000 To Kansas Company

The Rural Electrification Adminstration on Feb. 19 approved a loan allocation of $332,000 to the Consolidated Telephone System, Burrton, Kan., to provide new and improved rural telephone service in Harvey and Reno counties. This is the first REA telephone loan approved for Kansas.

The company's present system consists of three magneto exchanges at Burrton, Haven, and Buhler, and 109 miles of line providing service to 1,047 subscribers.

The company will use the REA funds to rebuild its existing line, convert the system to dial operation, construct 116 miles of new line, and bring service for the first time to 32 new subscribers. The new construction will replace 113 miles of grounded magneto lines owned by 425 subscribers now receiving switching service. The funds also will finance construction of a new headquarters building at Burrton.

When rehabilitation and new construction are completed, the company expects to operate a modern telephone system consisting of three exchanges and 225 miles of line providing dial service to 1,504 rural subscribers.

Taft for Free Speech in Labor Disputes

As far as amendments to the Taft-Hartley Act are concerned, the present lineup in Congress suggests that the law is not likely to be changed, either piecemeal or in a "single package" of amendments, at this session. As already noted, Senator Taft is willing to revise the law (of which he is co-author) only on a comprehensive basis (meaning "one package") that will strengthen the statute as well as clear up unduly restricted provisions which Taft concedes might need adjustment.

But the persistent critics of the law only want the old teeth drawn; they don't want new teeth put in. For that reason, they are not likely to go along with the "one package" treatment. And with President Truman in the White House, that probably seals the fate of any such legislation.

Conversely, the GOP and southern Democrats have enough strength to block any piecemeal dilution of the act. So the prospect is one of stalemate; with nothing doing either way. Of course legislation will be introduced. Indeed, Senator Murray (D., Mont.) is expected to put in a bill in the near future which will carry out the provisions of his recent labor committee report recommending nation-wide bargaining for the Bell System. This will probably take the form of a proposal to require AT&T to bargain with the unions, without respect to operating company differences.

So, we can expect Senator Murray and others, on behalf of the labor unions, to make more agitation along this line. On the other hand, Senator Taft flatly rejected one recommendation in the Murray committee report (on Bell System labor relations) that the "free speech" guaranty of the Taft-Hartley law be repealed. Taft's position on this was part of his dissent to the Murray committee report urging nation-wide bargaining in the telephone industry. Taft's minority report was also signed by Senators Smith (R., N. J.) and Nixon (R., Calif.).

It will be recalled that the majority report complained that the so-called "free speech" guaranty of the Taft-Hartley Act allowed telephone company management to use "captive audiences" to criticize union activities. Taft's report said that no other section of the Taft-Hartley law "commands more general approval." He said it bars employers from making threats or offering rewards and that

(Please turn to page 43)

Transmitted Carrier System for Lines of Short or Medium Length

By G. H. BRODIE*

EDITOR'S NOTE: *This is a paper presented at the 1950 fall general meeting of the American Institute of Electrical Engineers and is reprinted from the Transactions of the AIEE.*

* * * *

TRANSMISSION of the carrier frequency on telephone lines is as old as carrier telephony itself, but, in the first successful use of carrier circuits on multiple long lines applications, this practice fell into disfavor for the reasons set forth by Colpitts and Blackwell[1] in 1921. Several of the important advantages associated with transmitted carrier were recognized at that time but they were held to be outweighed by its disadvantages. Considering the nature of typical long lines applications and the state of the art in those early days, suppression of the carrier appears to have been the only logical choice. But the use of telephone carrier circuits no longer is confined to long lines and the state of the art had advanced a great deal.

There are 6,016 Independent telephone companies in the United States and possessions[2] which are operating, for the most part, over lines of short-to-medium electrical lengths. Bell telephone companies serving rural areas, many railroads, oil companies, and other organizations own and operate additional lines of similar characteristics. Since World War II the use of carrier circuits on such lines has become widespread and is increasing rapidly. Here the requirements and operating conditions usually differ materially from those found on long lines applications. For these reasons, it does not follow that the type of carrier system most suitable for one field must also be best for the other.

Contemporaneously with the increased use of carrier systems on the shorter Independent lines, several makes of equipment have been presented to fill the need in this field.[3-8] These differ from each other in details, but all carry over into this newer field the old "long lines—supressed carrier" approach.

Where technical personnel is available to make the necessary measurements and adjustments, suppressed carrier systems generally are satisfactory. They do, however, impose unnecessary hardship on the small company where suitably trained technicians are not always available. Furthermore, the desirable characteristics of suppressed carrier systems are of less importance in the Independent field than in multiple long lines applications. Conversely, the increased simplicity of adjustment and maintenance possible with a transmitted carrier system becomes of relatively greater importance.

It was our conviction that a transmitted carrier system, if a suitable one could be developed, would be of great advantage to most Independent operators. This conviction resulted in the production, early in 1947, of a single-channel carrier system operating on the transmitted carrier principle. The first model was readily accepted in the Independent field and almost immediately proved its worth. From this beginning the stackable one-, two-, or three-channel type Number 5 carrier system, as described in this paper came into being.

It is interesting to note that, while this development was in process, an increased interest also was shown in transmitted carrier systems in Australia.[9] As the advantages possible with equipment of this type become more generally appreciated, it seems likely that its use in the Independent field will become more general.

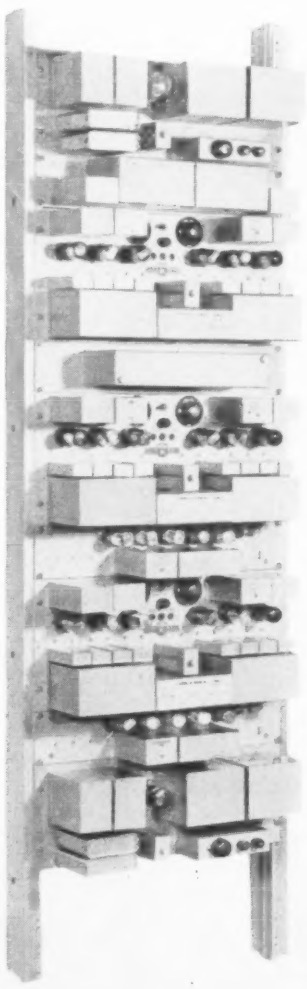

Fig. 1. General appearance of a three-channel carrier system terminal.

Description and General Considerations

Fig. 1 shows the general appearance and arrangement of the various panel-mounted units making up a complete three-channel terminal for the type No. 5 carrier system. The arrangement shown is for ringdown signaling over

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the first channel and dial signaling over the second and third, with power obtained from two No. 105 power supplies. A single heavier duty power supply can be used to save rack space, and signaling units can be of the dial or the ringdown type on any of the channels. Standard 19-inch rack space required for a single-channel terminal is 22¾ ins. For two channels this becomes 35 ins.; and for three channels with one power supply, 47¼ ins. With two power supplies the figure is increased by seven inches.

Considering the panel-mounted units from top to bottom, the first is a conventional power supply delivering 200 volts of direct current and 6.3 volts of alternating current. The second is the line unit consisting of high and low pass line filters, a carrier frequency repeating coil, and a simple balancing network to be inserted in the other pair of a phantom group when no carrier is installed thereon. The third unit is the first channel carrier terminal and the fourth is its associated ringdown signaling unit. Number five is the second channel carrier terminal and six is its associated dial signaling unit. Numbers seven and eight are the third channel units corresponding to five and six respectively, while number nine is the second power supply.

The frequency allocations for this carrier system and, for comparison, the Association of American Railroad's carrier frequency agreement,[10] are shown by *Fig. 2*. It may be noted that the carrier frequencies are in such harmonic relationship that they can generate no beat frequency falling in either the audio or in one of the carrier bands. Thus one of the disadvantages sometimes associated with transmitted carriers is circumvented.

The over-all layout and sequence of operations in this system are illustrated in block diagram form by *Fig. 3*.

While the carrier terminal panels for each of the three channels are similar in size and general appearance, the first channel uses no power amplifier tube and transmits at a maximum level of 10 db above one milliwatt. The second and third channels employ power amplification and transmit at a maximum level of 20 db above one milliwatt. The available transmitting and receiving gain is approximately 23 db for the first channel and 35 db for the second and third channels. With this arrangement, performance measured in miles of typical line, is approximately equal for the first and second channels, with the third channel dropping from 12½ to 30 per cent.

Since the elimination of objectionable intermodulation products is a serious problem, particularly in a multichannel carrier system employing transmitted carrier at relatively high levels, very careful consideration has been given to the design of the filters and other circuit elements. The inductance of certain coils in the band-pass and other carrier frequency filters must remain constant from the lowest to the highest signal level. This means that large powdered metal or oxide cores of low permeability, or air cores, are required.

In the case of the carrier frequency repeating coils, a Mu metal core is used which provides a high initial permeability and also holds its permeability reasonably constant throughout the range of the magnetizing force encountered. Thus, by using an adequate cross-section, thin laminations, and a large number of turns, intermodulation products from this source are kept very low.

Excellent frequency stability over a wide temperature range is attained through the use of stabilized toroidal inductors and a special type of ceramic capacitor, with air dielectric variable capacitors for making the final adjustments.

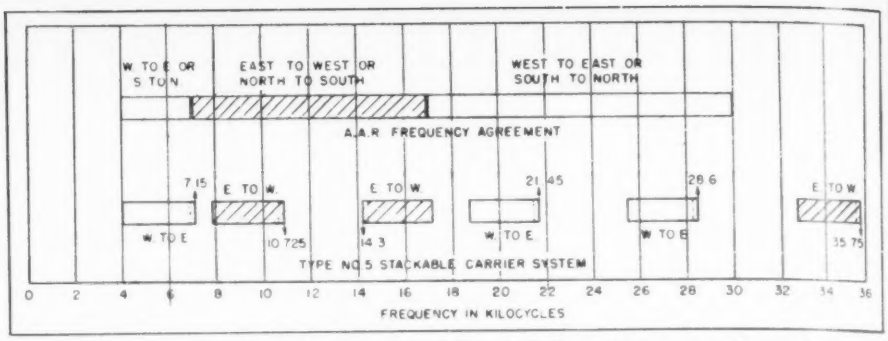

W. TO E. OR S. TO N.
EAST TO WEST OR NORTH TO SOUTH
WEST TO EAST OR SOUTH TO NORTH
A.A.R. FREQUENCY AGREEMENT
7.15
E. TO W.
E. TO W.
21.45
28.6
E. TO W.
W. TO E.
10.725
14.3
W. TO E.
W. TO E.
35.75
TYPE NO. 5 STACKABLE CARRIER SYSTEM
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36
FREQUENCY IN KILOCYCLES

Fig. 2. Type No. 5 and American Association of Railroads frequency assignments.

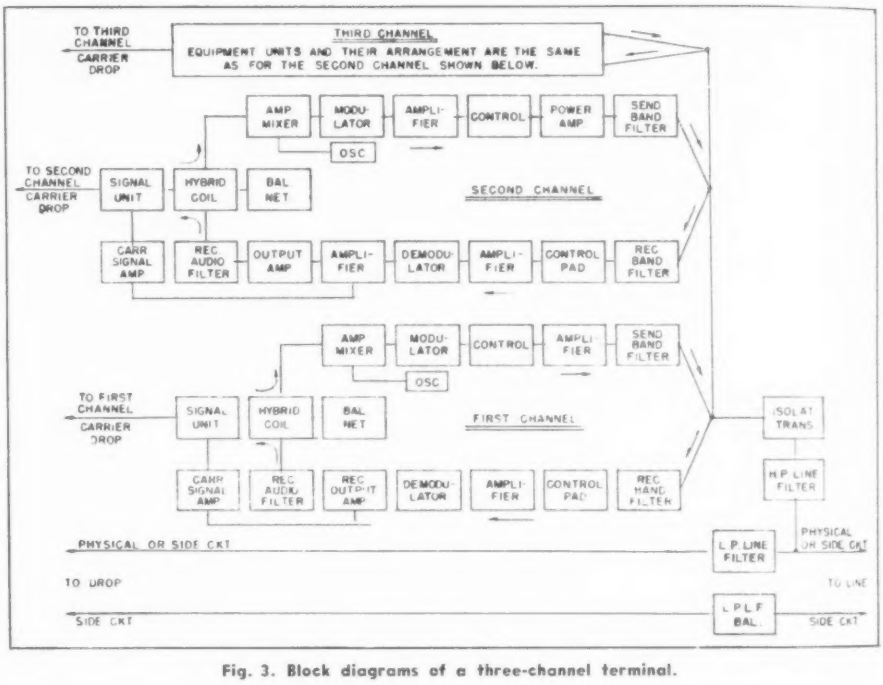
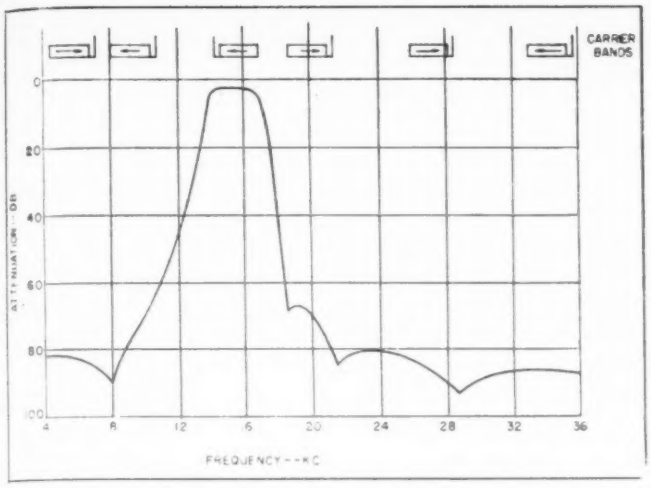


Fig. 3. Block diagrams of a three-channel terminal.

Band filter requirements are fairly severe in a carrier system of this type, since the other high level carriers, as well as their associated sidebands, must be excluded from a given channel. This applies most forcefully with respect to the carriers transmitted in the opposite direction. Very high attenuation outside of the pass band, with rejection notches where they are most helpful, keep interchannel cross-talk well below the generally accepted one millivolt level. The frequency response of a typical band-pass filter is shown by *Fig. 4*.

When the carrier is transmitted at full strength, a small amount of low-frequency signal from the rejected sideband unavoidably is included. Suitable equalization is built into the receiving circuits to correct for the increased low-frequency audio signal which otherwise would result. Actually, the overall response is uniform within 3 to 4 db from 250 to 2,750 cycles approximately *(Fig. 5)*.

Another disadvantage commonly associated with transmitted carrier systems is that one (or more) of the carrier frequencies present on the line,



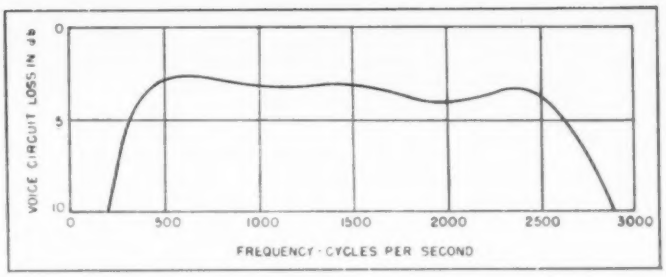


Fig. 5 (above). Voice frequency response through a 25-db line.

Fig. 4 (left). Frequency response of filter for east-west band of second channel.

at levels several decibels higher than that of the sidebands, is likely to be picked up by other makes of carrier systems on the same pole line and be demodulated in the receiving terminal. There it would appear as a steady audio tone. It has been our experience that such conditions are seldom encountered in the Independent telephone field. An inexpensive provision has been made, however, to partially suppress the carrier frequencies on the type No. 5 system when it is necessary or desirable to do so. These frequencies then appear on the line at levels no higher than the sidebands and are selectively amplified to the desired extent in the receiving terminals.

In the early days of telephone carrier practice the vacuum tubes then available limited the power which could be handled conveniently to rather low levels. Today it is entirely practicable to handle power in excess of one watt in the final amplifier, so the former objection that transmitter carrier would overload the amplifier tubes is no longer very significant.

Principles of Operation

Except as the processes are modified by the characteristic features mentioned elsewhere in this paper, voice frequency signals are transmitted and received in the conventional manner.

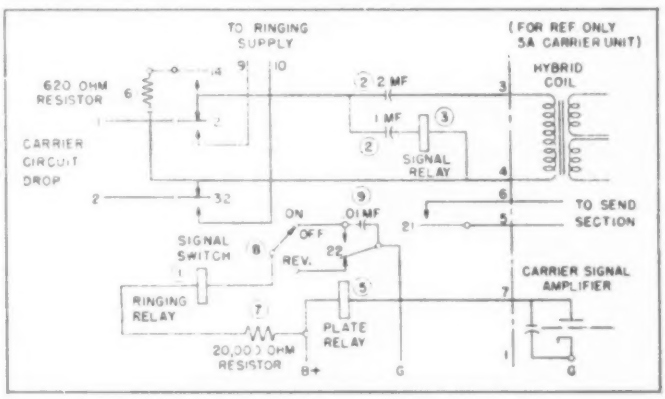


Fig. 6. Circuit schematic of ringdown signal unit.

The extreme simplicity of the ringdown method of signaling is easily understood from a short study of *Fig. 6*. Ringing voltage, when applied across the carrier circuit drop, interrupts the transmitted carrier. At the distant terminal the interuption of the carrier places ringing voltage from a local source across the carrier circuit drop, causing operation of a switchboard signal, or a telephone ringer, in the normal manner.

The dial signaling unit, as shown schematically by *Fig. 7*, provides means for accepting dc pulses at the local carrier terminal and for delivering duplicate pulses to a suitable circuit associated with the distant terminal. Full supervision is available at all times as will be shown. The required signaling functions are performed by causing the carrier frequency to shift slightly each time battery voltage is applied to or removed from the "M" lead. The amount of shift is not enough to interfere with voice frequency transmission, but is enough to cause the discriminator and biased triode amplifier at the receiving end to operate a relay. The discriminator and signaling relay faithfully reproduce the dial pulses just as they come into the carrier system.

Considering a call from a toll operator to an automatic telephone office, the operation of the carrier shift principle is as follows. With the carrier channel idle, each carrier stands shifted to its off-normal frequency. When the operator at the east terminal plugs into the drop circuit, battery voltage is placed on the "M" lead. This oper-

(Please turn to page 38)

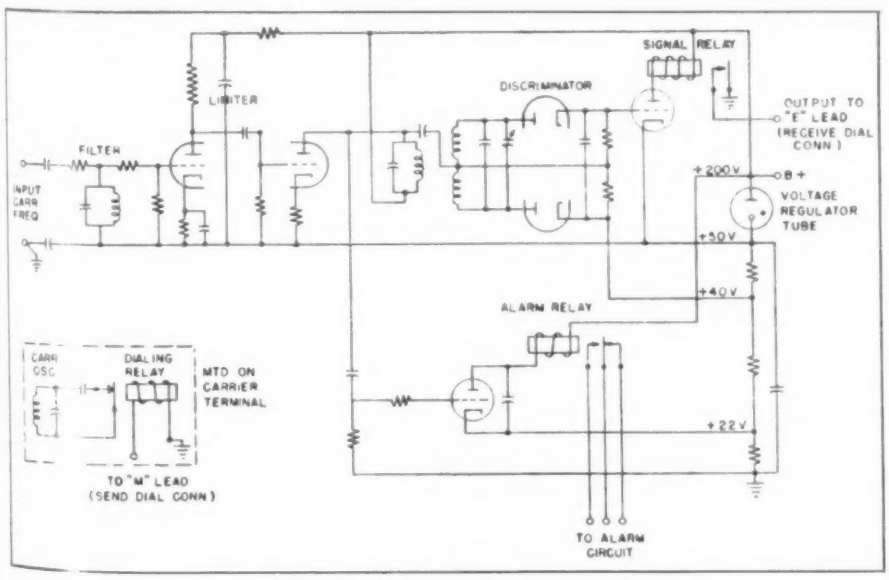


Fig. 7. Circuit schematic of dial signal unit.

LEFT PHOTO: From the front of the Westmont Central office building everything seemed serene. Explosion was particl to the west side and roof which will help hasten rebuilding. RIGHT PHOTO: These men are cleaning up the "mess" on the west side of the building which received the full effect of the blast. The entire roof along the wall collapsed.

Telephone Men Meet Test in Johnstown, Pa. Christmas Explosion

ANOTHER Christmas was just about over. Tired children who had been well remembered by Santa Claus and had worn themselves out with the new toys were tucked into bed. Equally tired parents were straightening up homes and looking longingly at easy chairs in anticipation of the first rest of the day.

The teen-agers and the home-from-college set were ready to take off for the Christmas night dances. Telephone calls for taxicabs and for last minute arrangements were humming over the wires. Long distance calls to exchange holiday greetings were taxing the lines.

This was in the suburban Westmont district of Johnstown, Pa., on Christmas night of 1950.

Suddenly, there were no telephone calls going through in this area served by a central office of the Pennsylvania Telephone Corp.

The roof had just been blown off the Westmont central office by a terrific gas explosion. Two thousand telephones went out of service with the blast.

Speeding fire trucks with their sirens screaming disrupted the peace of the Christmas night as they sped to the scene of the explosion. They quickly halted the slight blaze that followed the blast.

But the Westmont central office was out of service. The roof had blown straight up in the air, and then fallen right back down on more than $200,000 worth of hard-to-get telephone equipment.

More important, 2,000 subscribers were soon to learn that such routine matters as calling Aunt Sally to discuss a new cake recipe, asking the downtown store if they could exchange Junior's ski pants for a larger size and seeking the doctor's advice on what to do for after-Christmas indigestion would now involve a personal expedition.

And, as a tribute to the courage, resourcefulness and ability of telephone people, all of these people had telephone service within 26 days after the Westmont explosion. Fire and police headquarters and others who require service for emergency purposes had telephone service before nightfall the day after the explosion.

Meanwhile, within minutes after the disastrous blast, the telephone people who grow up in their business with each day seeming to bring a new emergency, were swinging into action.

L. E. Grandy, Johnstown plant superintendent for the Pennsylvania Telephone Corp. and R. L. Dumeyer, district commercial manager, had been called from their comfortable homes and were at the scene of the explosion.

One glance told these experienced men that here, indeed, was an emergency on a cold, snowy winter night, with 2,000 homes which normally depend on telephones for a great measure of their safety and comfort now robbed of this service by the accident.

Long distance calls from Johnstown were placed to the company's headquarters in Erie, where President L. F. Shepherd, who directs the activities of the telephone company in 38 exchanges throughout the state, led the action that was to correct the explosion damage.

Key executives were called into the company's main office this blustery Christmas night. The situation demanded action, and they were ready to take it.

Gathered around the conference table in Erie, 285 miles from the scene of the explosion, these executives heard the details of the telephone disaster.

The group included President Shepherd, C. E. Jones, vice president; A. W. Pyrke, traffic superintendent; F. D. McCarthy, general commercial superintendent; H. L. Williamson, plant superintendent; E. C. Roys, chief engineer; D. L. Newberry, traffic engineering supervisor; T. J. Schuler, plant engineer; R. H. Scobell, equipment installation supervisor, and F. D. Reese, equipment engineering supervisor.

They all knew that the men on the scene were doing what they could at the moment, but that little could be done until daylight and that the Johnstown men would need help—lots of it.

Decisions were made quickly.

At 3:30 a.m. on the morning after Christmas, Vice President Jones and Messrs. Newberry, Schuler, Scobell and Reese, along with R. K. Shaw, another equipment engineer, were fighting off the chill of the station platform in Erie, waiting for a train to take them to Johnstown.

With them was Harold Carter, a heating engineer from an Erie plumbing and heating firm, for they knew that heat would have to be provided in the blasted building when workmen went in the next day, with the temperature crowding the zero mark.

Trains were late because in many nearby parts of the country, a winter storm was raging. The Erie contingent reached Johnstown, however, before noon the next day and action was started to get the 2,000 Westmont telephones back in service as quickly as possible.

The Johnstown plant department of the telephone company had 1,300 ft. of cable on hand. This was used immediately in restoring service to fire and police offices and others who are on 24-hour call for emergency duty.

Newspaper ads and radio spot announcements were used throughout the day after the explosion to keep the public informed about what the telephone company was doing to repair the explosion damage. Emergency pay stations were established in key locations throughout the Westmont exchange and messenger service was arranged with the Western Union to assure completion of vital incoming toll calls for Westmont subscribers.

At the same time, telephone equipment manufacturers were being contacted.

Surveys of the damage had been made and estimates given on the amount of new equipment needed.

Arrangements were made to secure 7,000 ft. of 2,100-pair cable and 8,800 ft. of 600-pair cable. The Graybar Electric Co. shipped the cable by truck and the first load arrived in Johnstown Wednesday night, 48 hours after the explosion.

Badly needed batteries came from the Gould Battery Co. plant in Depew, N. Y., and a main distributing frame, the important connecting link between cables and switching equipment arrived by Friday from the North Electric Co., Galion, Ohio.

Telephone men—linemen, installers, engineers, plant experts and executives, worked night and day to put telephone service back in Westmont—and they made excellent progress.

The first cable installation was probably the most difficult of the whole job. Workmen started to place the cable which was already in stock in the Johnstown plant at a location near the inclined plane which leads to the hilly Westmont section just outside the city.

After that job was completed, the new cable started arriving and the repair crews worked around the clock, putting in cable and connecting telephone after telephone as quickly as they could. And, all the time, they battled typical western Pennsylvania winter weather—low temperatures, heavy snows, followed by rain, quick thaws, sleet and more snow and cold weather.

Their efforts were rewarded by the progress being achieved.

By Jan. 20, just 26 days after the disastrous explosion all Westmont telephone subscribers were making and receiving calls over an emergency telephone system.

Vice President Jones and the Erie men stayed on the job practically all of the time the repair work was being done, directing the activities and aiding the Johnstown crews.

At the same time, they were planning the permanent repair job, which includes a new building for the Westmont central office, and also arranging for a supplemental directory to be printed and distributed so that everyone in the district would have the correct temporary numbers.

Arrangements were completed with the W. L. Carstensen Co., Johnstown, to rebuild the building. At this writing, the structure is almost completed.

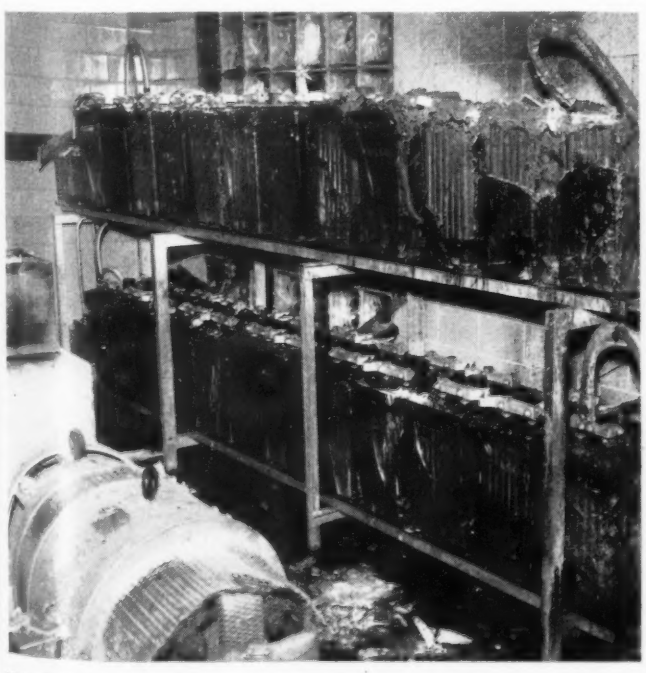
The big problem of speedy replacement of the totally destroyed central office equipment was solved with the promise of delivery of new equipment early in March. All service is expected to be back on a permanent basis between Apr. 15 and May 1.

The actual cause of the explosion, which required an expenditure of $300,000 to repair, has not been definitely determined.

It is known that gas seeped into the building through the cable conduits. Just what set it off is problematical. Tiny sparks from the switching equipment could have done it. A small second explosion followed the first one, when workmen, suspecting that the gas was still coming in, turned a blow torch into the cable vault shortly after they arrived at the scene. This quick flash, however, did no damage.

And, while the cause of the explosion may never be known, the emergency repair job is another tribute to the ability of telephone people to meet and conquer emergencies as they may occur.

President Shepherd summed up the situation when he said, "While the catastrophe was very costly and caused a serious setback in the plans for expansion programs in Johnstown, the all-out effort of every employe concerned is a fine tribute to the caliber of telephone people."



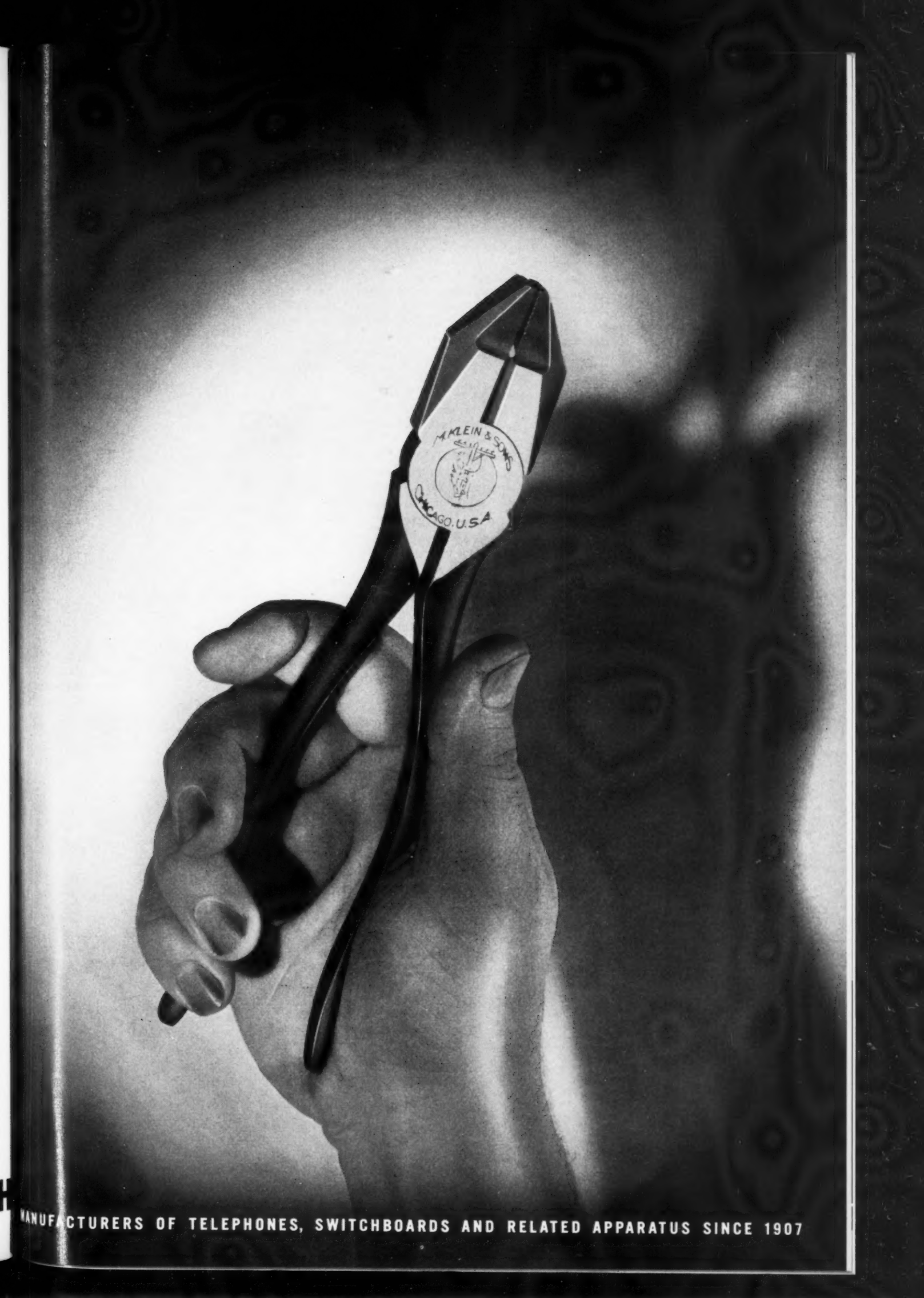
LEFT PHOTO: Emergency power batteries were reduced to broken glass and splattered acid. Generator in the foreground was unharmed. RIGHT PHOTO: Twisted main frame and charred timbers show the extent of the damage more than any words. Firemen fought for 30 minutes before the blaze was under control.

he's a telephone man all right...

- Did you ever hand a telephone man a new pair of Klein pliers?
- He fondly nestles them into a comfortable grip, takes a few imaginary snips and then holds them up and looks at them like they were the Kohinoor diamond. "Ah!" says he, "what a beautiful pair of pliers."
- We folks here at Leich, think that a genuine appreciation for good tools is common to all telephone men, whether they be grunts or presidents. It seems as though telephone folks can recognize the honor of the maker, the skill of the builder and the fineness of the materials in a tool just by looking at it.
- So strongly do we feel this that we *NEVER* try to sell tools, or equipment either, that cost less and are *almost* as good.
- Telephone men cut clean and quick and sure with Klein pliers. They have confidence in these tools and in themselves for having them. Their work, once done, should stay done if they are to live up to their enviable code of good service at all times — at all costs.
- Far be it from us here at Leich to change this pride in good workmanship that the telephone industry holds to so strongly. Every year we reject dozens of products because they are not up to telephone industry standards. Every year we call upon Independent testing laboratories to find out if a product will really do what it must do.
- Some day, perhaps, some of your sons will open a package from Leich and say, "Ah! what a beautiful pair of pliers!"

Leich Sales Corporation, 427 West Randolph Street, Chicago 6. Illinois.

LEICH



MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

TELEPHONE BULWARK OF DEFENSE—WILSON

IN THE 75th year (1950) of the telephone the Bell System served more people and handled two and a half billion more conversations than in any previous year. The national defense emergency brought a new tide of telephone demand. Service high in quality was well maintained. The men and women of the system did a superb job, Leroy A. Wilson, president of the American Telephone & Telegraph Co., stated in the company's annual report issued on Feb. 26.

"Today more than ever, our country has the most and the best telephone service in the world. This is a bulwark of defense. The telephone speeds production. It is vital to the Armed Services. It spreads warning against attack. As the nation gathers its strength, the urgent calls of the hours are on the telephone lines.

"The Bell System is alert to its essential task and is preparing further. The system will do its full part in helping to keep America secure. That is our Number One job today," Mr. Wilson stated.

In the last five years the Bell System has spent almost $5\frac{1}{2}$ billion dollars to expand and improve telephone facilities. Nearly $900,000,000 was expended for new plant in 1950. All requests of military and defense authorities were fully met. In 1950 1,955,000 telephones were added. The proportion of dial telephones in the system increased to 76 per cent. Service to farmers was further extended and modernized—with 1,000 rural telephones being added each working day. Thousands of miles of radio relay and coaxial cable systems were placed in operation. Many more cities and towns were equipped for toll dialing and operators now dial more than a third of all toll and long distance calls straight through to the distant telephone. Direct dialing by customers was further extended so that some 3,500,000 telephone users can now dial many of their calls to nearby communities, Mr. Wilson said.

Over 43,000,000 telephones now serve the people of the United States—double the number before World War II and 15,000,000 more than five years ago. This enormous gain plainly shows the increasing part the telephone plays in our national life, he said.

In the performance of the industry as a whole, thousands of Independent companies and systems operate nearly 8,000,000 telephones and make possible nation-wide service through interconnection with Bell System lines. The continuing cooperation among the Independent organizations and the Bell companies has been essential to the record of rapid growth and steady improvement, Mr. Wilson stated.

Financing to Meet Service Demands

While the Bell System's service has doubled in the last 10 years, new demand continues high. The plant is very heavily loaded and there are many urgent needs that require substantial construction, according to Mr. Wilson.

In November, 1950, AT&T stockholders voted to increase the number of shares of stock that can be issued from 35 to 45 million. They also authorized the company's board of directors at its discretion to issue up to $435,000,000 in convertible debentures and to offer a maximum of 3,000,000 shares to Bell System employes under a new Employes' Stock Plan.

Pursuant to the above authorization, the company has offered to stockholders $415,414,000 of 12-year $3\frac{3}{8}$ per cent convertible debentures, for subscription in the ratio of $100 of debentures for each seven shares of stock held on Jan. 29, 1951. These debentures will be dated Mar. 19, 1951. They will be convertible into stock beginning June 1, 1951, at $138 per share, payable by surrender of $100 of debentures and payment of $38 in cash.

In February, 1950, the AT&T sold $200,000,000 of non-convertible debentures. About 2,370,000 shares of stock were issued during the year as the result of conversions of the company's three outstanding convertible debenture issues; this reduced debt by $237,000,000 and increased stock capital by $313,500,000, the latter amount being larger on account of the cash premiums paid in. Nearly a million shares were issued under the Employes' Stock Plan, and employes made installment payments toward purchase of additional shares.

A year ago the proportion of debt in the Bell System capital was about 52 per cent. Today it is about 48 per cent, and with full subscription of the new issue of convertible debentures the proportion would be about 50 per cent.

"This general level of debt is much too high. Most of the new money needed to meet service demands should come from the issue of stock, either through bond conversions or otherwise. That is the foundation of our whole financing program. About $400,000,000 of the previous three convertible debenture issues are now outstanding. Their complete conversion, together with conversion of the full amount of the new issue, and sale of the balance of shares which may be issued under the Employes' Stock Plan authorized in 1946, would reduce the debt in the system's capital structure to about 37 per cent.

"As a long-range objective, the proportion of debt should be further reduced. Experience makes clear the wisdom of this. When the system entered the postwar period less than a third of its capital was debt. That made it possible for the Bell companies to obtain, in a very short time, the enormous amounts of new money needed to meet unprecedented service demands. It is hard to see how otherwise we could have discharged our responsibilities to the public we serve. We should be less prepared for the future," Mr. Wilson said.

Rates, Earnings Must Be Adequate

Operating revenues of the Bell System in 1950 were $3,261,528,000, an increase of $368,255,000 or about 13 per cent over 1949. Operating expenses of $2,334,362,000 compared with $2,248,833,000 in 1949. Net operating income in 1950 was less than 4.5 per cent on telephone plant and the return would be even lower if the plant were valued at present costs. The rate of earnings on capital was 6.1 per cent, compared with 4.9 per cent in 1949 and 7 per cent in 1940.

Total income available for interest and dividends in 1950 was $472,114,000. Interest charges amounted to $113,247,000. Consolidated net income applicable to AT&T stock was $346,962,000, or $12.58 per share, compared with $9.70 per share in 1949. Investment per share at the end of 1950 was $138, compared with about $135 at the end of 1949. Net income of the American company by itself (which includes earnings of subsidiaries only to the extent that they have been received by the company as dividends) was $10.40 per share in 1950, compared with $9.49 in 1949.

Charges Increased Less Than Most Prices

"The telephone industry has long been under continuous public regulation. Regulatory authorities through the years have generally had the wisdom to approve levels of rates that

have permitted good service, fair wages and reasonable earnings. The outstanding development of the telephone in this country is due in no small measure to this fact.

"Since the middle of 1950 alone, increases in costs have offset a substantial part of the progress made in the entire postwar period in adjusting rates upward. Over the war and postwar years labor and raw material costs have doubled. Yet the rise in telephone charges continues to be much less than the increase in cost of most other things, and amounts to only a few cents per day per telephone. Telephone rate increases so far, together with those requested, average less than 25 per cent of Bell System revenues; and the rate increases that have been authorized amount to only a little more than half the current annual cost of telephone wage increases alone.

"Construction of new plant must go forward to meet the nation's new needs and to replace equipment that can no longer be used. Each telephone added today requires a much larger investment than the average investment five years ago. Thus increases in rates are needed not only to meet rises in the cost of doing business but also to provide a reasonable return on the higher investment per telephone. Applications for increased rates are pending in most states and other applications will be made as necessity requires," Mr. Wilson declared.

Taxes $2.65 Per Telephone Per Month

Taxes on Bell System telephone service in 1950 were about a billion dollars —some $200 million more than in 1949. The effect of the new federal tax laws recently enacted will be to increase taxes somewhat further in 1951, due mainly to the higher corporation surtax rate. Currently, taxes are running at a rate of well over a billion dollars annually, and are equal to about $2.65 per telephone per month.

Federal excise taxes paid by customers in 1950, and remitted by the Bell companies to the United States Treasury, came to about $500,000,000. Taxes levied on the companies (and also borne by telephone users in the last analysis) were $499,451,000.

Service Demand Continued to Increase

Though the gain in Bell telephones in 1950 was a little less than in 1949, the gain in the second half of the year was higher. Toll and long distance messages increased throughout the year and most sharply in the second half. Demand went up as the nation acted to meet the defense emergency.

Six million telephones were installed by the Bell System to meet new requests for service. The net increase of 1,955,000 brought the total number in service in the system to over 35,300,000. Toll and long distance calls were put through at an average speed of 1.6 minutes and 94 per cent of them were handled while the calling party held the line.

Twenty billion more telephone conversations were handled than in the last years before the war. In the same period toll and long distance messages have tripled. Especially over the longer distances, volume surged upward in 1950. Long-haul messages in the last six months were 17 per cent ahead of the same period in 1949; from the beginning to the end of the year, the increase was substantially greater than in the previous four years combined. Overseas calls, too, reached a new record high, with 715,000 messages handled—15 per cent more than in 1949.

The system's number of unfilled orders in 1950 was held to about 2 per cent of all telephones in service. Most of these are recent orders for residence service in areas where growth has been greatest. More than 900,000 requests were cared for from party line customers desiring higher classes of service.

Nearly One Million AT&T Owners

More than 990,000 owners now hold the stock of American Telephone & Telegraph Co. The company has twice as many stockholders as any other business enterprise. The increase of 156,000 in 1950 was the largest in any year.

Better than one in every 45 families in the United States shares directly in Bell System ownership. These families live in 19,000 cities, towns and rural areas throughout the country. They are a cross-section of the American people.

More than 200,000 Bell System employes own AT&T stock. Over 150,000 received shares in 1950 as they completed installment payments under the Employes' Stock Plan. Of the 2,800,000 shares authorized by the stockholders in 1946 for sale to employes, nearly 1,200,000 shares have been purchased and 230,000 employes are buying the rest.

Nearly 40,000 stockholders are trustees, schools, churches and others who hold their stock for the benefit of a great many other people. Some 220,000 other holdings are in joint accounts shared usually by two people, sometimes by more. Three-quarters of all stockholders at the end of the year held 25 shares or less. About 270,000 have owned stock for 15 years or longer. The average holding was 29 shares and no stockholder held as much as one-half of 1 per cent of the total stock.

Western Electric Sales $758,000,000

Western Electric Co.'s production was again far above the level of prewar years although not as large as in 1949. Sales amounted to $758,064,000. Eighty-seven per cent of the sales were to Bell telephone companies and most of the remainder to the United States Government. Earnings for the year were $38,647,000 or 5.1 per cent of sales.

Since the end of World War II the company has continued to produce much special equipment for the government defense departments. Deliveries to the government in 1950 exceeded $53,000,000. In recent months work has started on large additional orders for military equipment, chiefly electronic in character. Telephone equipment and cable for government defense projects are also being supplied.

Employes Increased in 1950

On Dec. 31, 1950 the Bell System had 602,500 employes, an increase of about 8,600 over 1949. Of these, 73,500 were employed by Western Electric Co. and 5,800 by Bell Telephone Laboratories. More than 60 per cent of all employes are women. The 1950 total payroll, including Western Electric and the laboratories, exceeded $2 billion for the third successive year. The expense payroll of the telephone companies represented 63 per cent of operating expenses other than taxes. On the average, wage rates for Bell System employes are now about double what they were in 1939.

Two hundred and five thousand employes have worked in the Bell System 10 years or more and 143,000 have served 20 years or more. The rate of turnover in the force is well below the rate in industry generally and in 1950 it continued to decline.

More than 8,000 employes were on active duty with the Armed Forces at the end of 1950. This number includes officers and enlisted specialists who had volunteered for service in four reserve units formed in cooperation with the Signal Corps of the Army. Five other similar units are still on reserve status.

The Bell companies maintain thrift plans under which employes may authorize regular allotments from pay. Under these plans, employes in 1950 laid aside $234,000,000, or 12 per cent of the payroll, for purchase of U. S. Savings Bonds and AT&T stock, and for life insurance premiums, hospital

(Please turn to page 23)

Someone's Adding to

Complete Coverage Brings Greater Revenue!

It pays to go over your list of paystation locations frequently—to be sure you are tapping every source of revenue. Check your list against these suggestions.

Drug Stores	Bus Terminals	Theaters	Summer Resorts	Hospitals	Offices
Restaurants	Railway Depots	Bowling Alleys	Ski Lodges	Public Libraries	Municipal Buildings
Hotels	Gas Stations	Golf Courses	Factories	Department Stores	Military Installations

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...ur Revenue Again!

...Each Autelco Paystation Brings You Additional Revenue

There goes another deposit, adding to your revenue! . . . Whether it's a few cents for a local call—or a dollar or more for toll — this is revenue you might otherwise lose. It's revenue you will be sure to gain, if you have plenty of paystations.

Everybody uses paystations, if you just make it easy for them! So be sure you have Autelco Paystations in every convenient location where grown-ups go and where youngsters get together. Paystations quickly pay for themselves, and then go right on bringing you welcome revenue. Studies show that the average paystation handles from two to ten times as much traffic as the average subscriber station!

There are Autelco Paystations to meet every operating requirement, including five-cent or ten-cent local service. Ask your supplier for catalog and complete details.

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Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
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and surgical care plans, and deposits in savings institutions.

Employe Benefit and Pension Payments

About $199,000,000, equal to 9.9 per cent of the payroll, was expended for benefit and pension purposes in 1950 by the Bell System companies, including Western Electric Co. and Bell Telephone Laboratories.

The Pension Trust Funds of the Bell System companies, including Western Electric Co. and Bell Telephone Laboratories, amounted to $1,231,332,000 at the end of 1950. There were 14,962 men and 10,250 women, or a total of 25,212 on the service pension rolls at the end of the year. Some 17,400 more employes had been credited with enough service and had attained the age which entitled them to retire on pension at their own request.

Freedom to Serve in Freedom's Defense

In closing his annual report Mr. Wilson said: "For three quarters of a century the Bell System has rendered service of more and more value to the American people. The telephone began in this country. Here it has been most widely developed and used. Our service has always been the best in the world, and its greatest increase in usefulness has come in the last five years. This is a great asset in helping to defend the freedom of the United States.

"Our telephone service is also a product of freedom. In the building of the Bell System, countless discoveries and inventions have had to be achieved by the inquiring spirit of free men. Opportunity has been open to all. Competition has flourished throughout the organization. Worthwhile incentives and reasonable rewards have fostered the will and capacity for leadership. In the rendering of services day by day, the responsibility to get the message through is accepted as a public trust: that too is the exercise of freedom.

"All that has been achieved flows from the nation we serve. Under public regulation, the Bell System has generally been allowed the freedom it needs to perform its service well. It is essential that this freedom to serve be undiminished; that research and invention go vigorously forward; that new leaders be encouraged and prepared to lead; and that earnings be fully adequate to continue to pay good wages to employes, and a return to investors sufficient to attract and protect the billions of dollars of savings that make the service possible.

"Through the years private enterprise and public policy in telephone communication have returned to the nation a value beyond price. We are confident they will do no less in the years to come. We are determined to meet the responsibilities entrusted to us, and we pledge our utmost efforts, always, in devotion to the public service and to the lasting security and advantage of the people of the United States."

1876 75 YEARS OF SERVICE TO THE NATION 1951

SEVENTY-FIVE years ago — Mar. 10, 1876—Alexander Graham Bell invented the telephone.

On that night, the 29-year-old Bell, who had been on the verge of transmitting intelligible speech over wire, was about to test a new transmitter when he spilled a jar of acid on his clothes. Irked, Bell cried to his assistant, Thomas Watson, "Mr. Watson, come here, I want you." Watson, who had been waiting in the next room for a test sentence, rushed in to announce that he had heard Bell's words clearly.

The invention that was to make America a nation of neighbors was a reality.

Today, more than 43,000,000 telephones—35,300,000 Bell and 7,700,000 Independent—carry an average of 170,000,000 two-way conversations a day, with calls being made not only from homes and offices but from automobiles, railroad cars, locomotives, ships and airplanes.

A few months after his initial success, Bell exhibited his telephone at the Philadelphia Centennial Exposition. Intercession by an old friend, Emperor Dom Pedro of Brazil, brought Bell's invention to the attention of a group of famous scientists—and the telephone was off to a flying start.

Bell set up the first one-way telephone line of any length over a borrowed eight-mile-long telegraph circuit between Brantford and Paris, in Ontario, Canada, in August, 1876. The first two-way conversation took place on Oct. 9 of that year, over a telegraph line from Boston to Cambridgeport, Mass.

Telephone service in the United States started on private lines in 1877 and by November of that year there were nearly 3,000 telephones in service. The first commercial exchange was opened in New Haven, Conn., in January, 1878, and was followed in rapid order by others throughout the country.

Demands for service became so heavy that the maze of open wire along city streets threatened, in the words of one writer, to "blot out the sun." In the 1880's, Bell engineers developed lead-sheathed cable and it became possible to place cable underground in conduit.

By 1892, telephone lines stretched from New York to Chicago. The first cross-country call came in 1915, when Bell helped mark the opening of the first New York-to-San Francisco line. Today, with the many improvements since that time, Bell companies teamed with Independent companies — which had their beginning in 1894—to give America the biggest and best local and long distance communications service in the world.

The first two-way transoceanic call was completed just about a quarter of a century ago, when officials of the British Post Office and the AT&T conversed over a radio link between Rugby, England and New York. Regular ship-to-shore service was inaugurated on Dec. 8, 1929, with the installation on the S. S. Leviathan of a telephone connecting the ship to Bell land lines.

Since the end of World War II, many more advances have been made in the art of telephony. Mobile service was introduced in 1946. Long distance service has been improved by the installation of operator toll dialing equipment that now handles about a 1,500,000 long distance calls a day—about a third of all long distance calls handled by the Bell System. Automatic message accounting has widened the customer dialing area in many locations and rural service has been greatly extended and improved.

The first objective of the telephone industry through the years has always been to provide the best telephone service possible. However, many other fields have benefited from the industry's developments. Bell engineers played a pioneering role in network radio transmission. In 1925, AT&T introduced telephotography service and as early as 1927, Bell engineers demonstrated a working television system. Other special services include private line telephone, exchange and private line teletypewriter, telephotograph, teletypesetter and networks for radio and television. In the last five years, there have been placed in operation more than 18,000 miles of coaxial cable and radio-relay channels which are used for transmitting television programs as well as long distance telephone conversations.

Today, with the nation's thoughts

(Please turn to page 40)

Courts and Commissions

Nebraska Mutual Authorized To Stop Service To Elwood

The Smithfield Mutual Telephone Co. has been authorized by the Nebraska Railway Commission to tear down a line that connects Smithfield with Elwood. (TELEPHONY, Feb. 24, p. 23.) Company officers said that although the service has been free, most of its subscribers prefer to pay the 5 cent toll charge service furnished by the Northwestern Bell Telephone Co. because the mutual line has not been properly maintained.

They said that they had started a program of economy and retrenchment. The commission held that public convenience and necessity would not be affected.

V V

U. S. Supreme Court Voids Wisconsin Anti-Strike Law

The United States Supreme Court on Feb. 26, in a 6 to 3 decision which may affect anti-strike laws in 11 states, outlawed a Wisconsin act banning strikes by public utility workers.

The Wisconsin anti-strike law was declared in conflict with the National Labor Relations Act by Chief Justice Fred M. Vinson, who was joined by Justices Black, Reed, Douglas, Jackson and Clark. Justices Frankfurter, Burton, and Minton dissented.

Transportation workers unions in Milwaukee had attacked validity of the law which banned strikes by public utility workers and required compulsory arbitration for labor disputes. Similar laws have been passed by Florida, Indiana, Kansas, Massachusetts, Michigan, Nebraska, New Jersey, North Dakota, Pennsylvania, and Virginia.

The ruling was on an appeal by the AFL Amalgamated Association of Street Electric Railway, and Motor Coach Employes, representing employes of the Milwaukee Electric Railway & Transport Co.

The union members objected to a state court order of Jan. 5, 1949, forbidding a strike and to the decision of the state board settling the dispute. The Wisconsin Supreme Court upheld both judgments. Three union officers were fined $250 each for failure to call off a strike immediately in response to court order, and the state supreme court upheld the contempt finding and the constitutionality of the law. The United States Supreme Court reversed these findings.

Justice Vinson said the National Labor Relations Act and the Labor Management Relations Act (Taft-Hartley Act) were the supreme law of the land and the Wisconsin law clearly conflicted with the federal legislation. The dissenting justices objected that they found nothing in these federal acts to indicate that "the states are not equally free to protect the public interest in state emergencies."

* * *

Assailing as a violation of the principle of home rule the U. S. Supreme Court decision invalidating Wisconsin's public utility anti-strike law, Gov. Alfred E. Driscoll of New Jersey, a state which has a similar anti-strike statute, asked New Jersey Attorney General Theodore D. Parsons on Feb. 27 to study the decision with the hope of obtaining possible reconsideration or of presenting the issue to Congress.

"The decision of the Supreme Court in the Wisconsin case," Governor Driscoll asserted, "is the unfortunate climax of a number of decisions by the court in recent years that have twisted and warped our Constitution to a point where it would be hardly recognizable to those who framed it.

"The opinion by a majority of the court is generally recognized as inadequate (and) seeks to establish a precedent that may destroy all of the gains that labor has made in recent years in the various states.

"It is a two-edged sword that will cut against both labor and management rights in the states while destroying the birthright of our republic: home rule. A cursory examination of the opinion indicates that the majority follows the administration line and strikes another blow at the Taft-Hartley Act.

"It is inconceivable that Congress ever intended to prevent the states from effectively maintaining the operation of essential utilities. I make this statement, despite the fact that it must be recognized that in recent years Congress had adopted some strange laws establishing unfortunate precedents, which, if continued, will leave us the form of republic without the substance of a republic.

"These unfortunate precedents give us a representative government in form only. Unless the dangers of these precedents are recognized quickly we will find ourselves governed by a centralized bureaucracy in Washington beyond the control of either the President or Congress, lacking all of the virtues of our traditional representative federal system.

"I've asked the attorney general to examine the Supreme Court decision immediately in the hope that it may be possible to have the court reconsider the same and also for the purpose of presenting the issue to Congress.

"I am taking this position despite the fact that I am unwilling to consider the decision in the Wisconsin case as decisive as far as the New Jersey law is concerned."

The New Jersey statute empowers the governor to seize a utility in event of a strike affecting public health and welfare and specified that the dispute shall then be submitted to a board of arbitration. Constitutionality of the New Jersey law has been upheld by the State Supreme Court.

Labor leaders in New Jersey, as well as nationally, hailed the U. S. Supreme Court decision and interpreted it as voiding the New Jersey act.

V V

Hickman, Neb., Company's Rate Petition Approved

Permission has been granted by the Nebraska Railway Commission to the Hickman Telephone Co. to increase by 50 cents a month the charge on all classes of service. The new schedule

calls for payment monthly on one-party and multi-party business of $2.75; one-party residence $2.50 and multi-party residence and rural $2.25, all gross rates.

The company serves 208 subscribers (121 rural) with magneto service over metallic lines and has 117 stockholders. The new schedule of rates will add $1,258 to the company's revenues. For 1950 revenues were $4,479 but expenses and taxes of $5,689 caused a loss of $1,128. The commission said the report was in error in charging to expense items that are properly capital assets, but estimates that the 1951 operations will be $99 in the black. The company has been engaged in rehabilitating the properties, and the higher maintenance costs were the basis for the application.

V V

Indiana Bell Takes Rate Case to Court

The Indiana Bell Telephone Co. on Feb. 13 asked Marion County Circuit Court for increased rates pending final decision on a rate increase petition now before the Indiana Public Service Commission.

Delay in the commission case has subjected the company to "unreasonable, unfair and discriminatory treatment," the petition alleges.

The commission was named defendant in the action, which seeks an injunction after a hearing to permit the company to put temporary rate schedules into effect. Refunds would be made to customers if the rates finally established are less than the temporary rates, the company said.

The company estimates that rates sought from the commission will add $4,900,000 to annual revenue, of which it will retain about $2,500,000 after taxes.

A. H. Warne, secretary and treasurer of the company, said:

"The company is now earning at an annual rate of 3.8 per cent on the fair value of its property and the temporary rate would provide a return of about 6 per cent."

In the complaint, the company based its appeal for temporary rates on the theory that delay would result in large loss of revenue.

The pending petition for rate boosts was filed with the Indiana commission last Nov. 21, 1950, (TELEPHONY, Dec. 9, p. 28) and no date for cross-examination or presentation of the commission counsel's case has yet been set, the company alleges.

In a prior rate case filed by the telephone company, the commission reached a final decision last September, a year, nine months and 16 days after filing of the original petition, the suit points out.

This delay, the company contends, resulted in a loss of $4,500,000 in revenue to which it would have been entitled under the rates finally established.

V V

Says Present Rates Give Adequate Return, Denies Plea

The application of the Martell Telephone Co. for an increase of 25 cents a month on all five classes of service was denied by the Nebraska Railway Commission on the grounds that the present rate schedule gives an adequate return.

The commission said that an examination of the company's report for 1950 showed that with total revenues of $4,842, it had earned after expenses and taxes a net profit of $1,203, which represented a return of about 7.8 per cent on a reported rate basis of $15,-451.

The proposed rates would have added $531 a year to gross revenues, but computing expenses and taxes on the basis supplied by the company, the commission found that the net profit of $1,189 would represent a return of about 8.8 per cent on an adjusted rate basis.

While conceding that utilities are entitled to a fair return on the actual value of the property used and useful, the commission found that the proposed rates were not fair and reasonable in that they were more than sufficient to yield a reasonable return. No protests had been made by subscribers. The company provides 177 stations (21 rural) with magneto service over a wholly metallic system.

V V

Supreme Court Lets NW Bell's South Dakota Increase Stand

The federal Supreme Court on Feb. 26 let stand a South Dakota Supreme Court decision granting an increase in intrastate rates for the Northwestern Bell Telephone Co. amounting to $1,000,000 a year.

The high court rejected a request for a review filed by the Farmers' Union Educational and Cooperative Association of South Dakota, and the Junior Chamber of Commerce of Mitchell, S. D.

The South Dakota Supreme Court decision ordered the South Dakota Public Utilities Commission to grant increased rates to the company. The decision reversed a commission order that denied an increase on the ground that the old rates provided an adequate and fair return to the company (TELEPHONY, Dec. 23, p. 22).

V V

NW Bell, Funk, Neb., Companies Reach Consolidation Agreement

The Nebraska Railway Commission has approved an agreement worked out by the Northwestern Bell Telephone Co. and the Funk Telephone Co. which will result in a consolidation and unification of service and also eliminate duplicate exchange installations.

The Northwestern Bell operates exchanges at Minden and Axtell in Kearney County, where the Rural Electrification Administration has been working on a unification of about a half dozen small mutual companies.

Under the agreement a revision of tariffs at Axtell was necessary. All toll charges on the Axtell-Funk route will be eliminated for rural and service station customers, who will have unlimited service to Minden, Axtell and Funk at a flat monthly rate of $2.75. Axtell urban residence subscribers will pay 25 cents a month for the extended service, and urban business subscribers a flat additional 50 cents a month. Other changes are minor, but generally result in subscriber savings. The Northwestern will provide and maintain metallic circuits to the Phelps County line and Funk the remainder of the way.

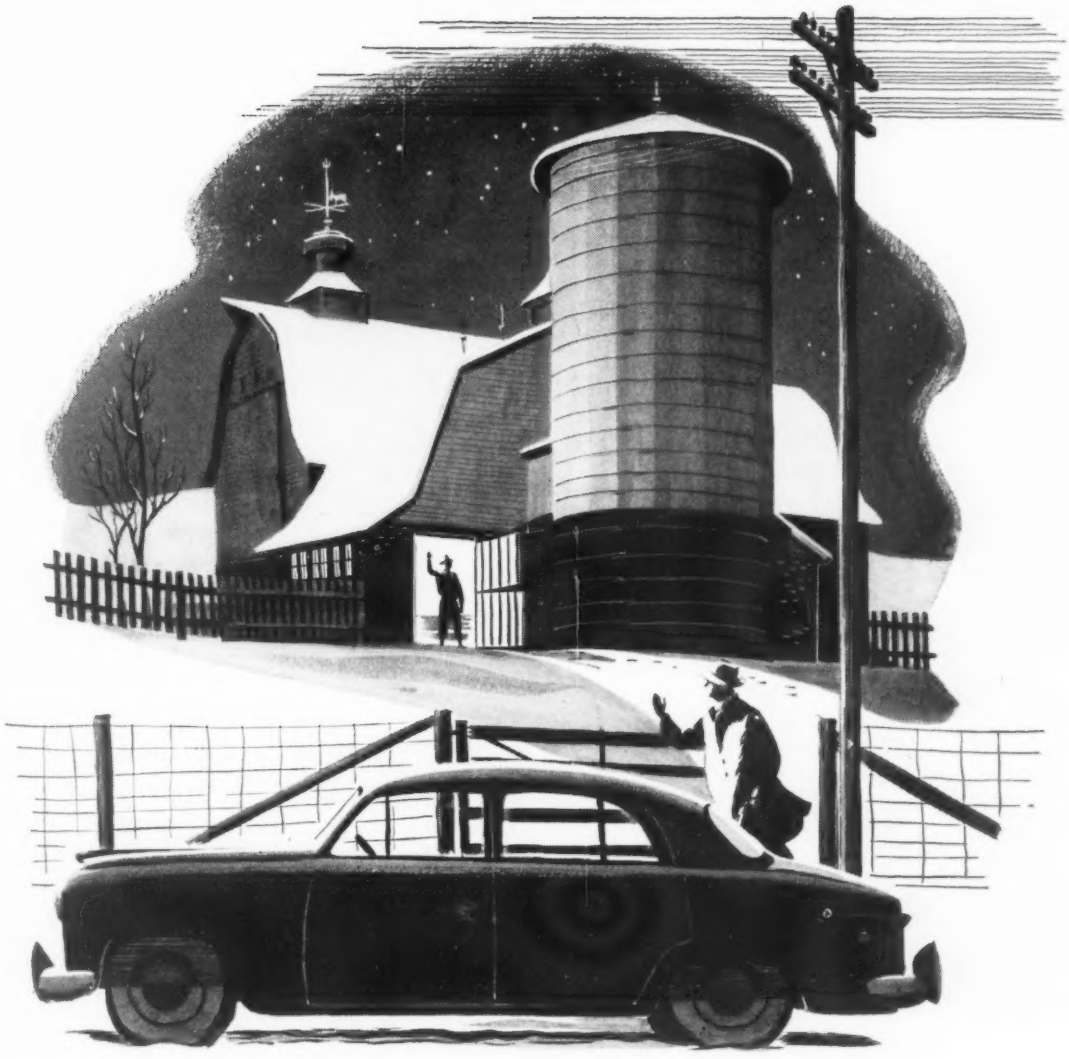
The overlap in service areas between Axtell and Funk has resulted in costly duplicating of parallel outside plant construction and the duplicate station installations on customer premises, along with duplication in exchange service billing. All classes of Axtell subscribers who also have been customers of the Funk exchange, have paid service fees of $16.00 per year, or $1.33 per month for Funk service alone in addition to their charges at Axtell.

V V

Bill on REA Cooperatives Opposed by Oklahoma People

More than 100 representatives of Oklahoma telephone companies appeared before a state senate committee to oppose certain features of S.B. 155 permitting the organization of co-operatives financed by the Rural Electrification Administration in the state. (TELEPHONY, Feb. 24, p. 26.)

Hugh Straughn, secretary of the Oklahoma Telephone Association, stated at the hearing that Oklahoma telephone companies are not opposing the formation of co-operatives organized under such loans, but that some of the terms of the proposed act, particularly those requiring telephone companies to connect with co-operatives



"Good night, Doc . . . and thanks!"

Ed Brown's prize cow had been "off her feed." A turn for the worse . . . a midnight telephone call brought the vet quickly. Things are looking better now . . . with the help of the telephone.

• • •

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Western Electric

TELEPHONE APPARATUS AND CABLE

and exempting such co-operatives from taxation, would constitute unfair and destructive competition.

The Senate committee agreed to the appointment of a joint committee of five proponents of the REA co-operative bill and five men representing the Oklahoma Telephone Association, to draw up a new bill, or amendments to the pending measure and present them at a later meeting.

Under existing Oklahoma laws telephone cooperatives, if operated on a non-profit basis, are already exempted from jurisdiction of the commission over their rates.

V V

New England T&T Ordered To Refund $6,000,000

The Massachusetts Supreme Court has issued a decision requiring the New England Telephone & Telegraph Co. to refund an estimated $6 million to its subscribers on the ground that existing rates are too high. The decision rejects the company's appeal to the Massachusetts Department of Public Utilities for a $15 million increase in its annual revenue, but finds that the regulatory body's decision ordering rates which would add about $9 million to the annual income of the company is too low. The present rates were ordered to be continued until the commission establishes new rates on the basis of the court's finding. This is the first time that the supreme court has been called upon to consider utility rate cases on the basis of a new law which authorizes it to review, modify, amend or annul such rates.

For the past two years the company has been billing Massachusetts subscribers at rates calculated to yield increased revenue of $15 million yearly. It was allowed to do this by posting a $10 million bond for the purpose of reimbursing subscribers in the event that the court found that the rates were too high. New rates must fall between the $10-$15 million levels of increase. The full bench concurred in the finding, which was written by chief justice Stanley E. Qua.

The company had appealed to the court against the commission's finding. It declared that the $15 million raise in rates was necessary to offset an annual increase in wages of $8 million, and an expenditure of about $120 million in increased plant and service facilities since World War II. The company pointed out that it had been obliged to borrow the $120 million and that this impaired its credit and the value of its stock.

In its decision the court said that the question was not what rate schedules would maintain the stock values, but what must be done to sustain the service of one of the greatest and most necessary public utilities. It held that the company is legally and morally bound to increase its service to meet an insistent public demand. As a regulated public utility it has a constitutional right to earn sufficient return to maintain its credit and obtain additional capital needed to serve the public properly. The new schedule is expected to give the company a net return of at least 8.5 per cent on its capital stock and 6.23 per cent on its reinvested surplus.

V V

Oklahoma Company Receives REA Loan, Asks Rate Increase

Promising that he will extend modern dial service to portions of Pittsburg, Coal, Atoka and Johnston counties in southeastern Oklahoma, if he is granted higher rates, J. R. Butler, Kiowa, manager, Oklahoma Automatic Telephone Co., stated to the Oklahoma Corporation Commission that the new rates would be applied only as improved service is extended.

At present he is operating at Kiowa, Stringtown, Mill Creek and Clarita. He recently obtained approval of a loan of $409,000 from the Rural Electrification Administration. His company now serves about 329 subscribers.

Mr. Butler told REA representatives that he could serve Ashland, Wardville, Ti, Connerville, Daisy, and Reagan in addition to his present service area, if given the rates recommended by the REA, and that he could make over-all service improvements if granted the rates as recommended.

Paul R. Reed, commission examiner, took the application under advisement at the close of the hearing.

V V

N. C. Company Requests Stock Issue to Finance Improvements

The North State Telephone Co., High Point, asked the North Carolina Utilities Commission Feb. 27 for permission to sell 500 shares of cumulative stock to finance improvements.

The company, which last December was authorized by the commission to increase its rates, (TELEPHONY, Dec. 16, p. 26) said the stock would have a $100-per-share value and would pay $5.00 dividends.

Reporting that it installed $500,000 worth of plant and equipment last year and gained 2,107 telephone installations, the company said it "did not quite make dividends last year by the amount of $806.86, but we expect to do much better this year after the revision of rates."

Recommends Rate Increases for Ninnekah, Okla., Exchange

Paul R. Reed, commission examiner, has recommended to the Oklahoma Corporation Commission rate increases averaging about $1.00 a month on all classes of service and ordered the Ninnekah Telephone Co., serving the town and rural area, to continue with its service.

Statements from subscribers indicated that they would be willing to pay higher rates if the service is improved. Mr. Reed also recommended that the commission deny the application of the owner to abandon his exchange there. (TELEPHONY, Feb. 24, p. 26.)

V V

N. C. Law Restricts Telephone Conversations With Women

The North Carolina legislature on Feb. 27 enacted a bill making it illegal and providing stiff penalties for using vulgar, indecent or profane language to any female on the telephone.

Before enactment of the bill, state statutes regarding such language over the telephone applied only to telephone operators. An effort to add an amendment making the new measure also apply to males was defeated.

V V

10 Per Cent Utilities Tax Repealed in Jacksonville, Fla.

Three bills repealing the 10 per cent utilities tax which had been imposed locally by the city of Jacksonville, Fla., were passed by the Jacksonville City Council and signed Feb. 28 by Mayor Haydon Burns.

The tax, which went into effect Oct. 1, 1947, was levied on electricity, metered and bottled gas, water service and telephone service. The levy last year yielded $1,263,244 in revenue.

V V

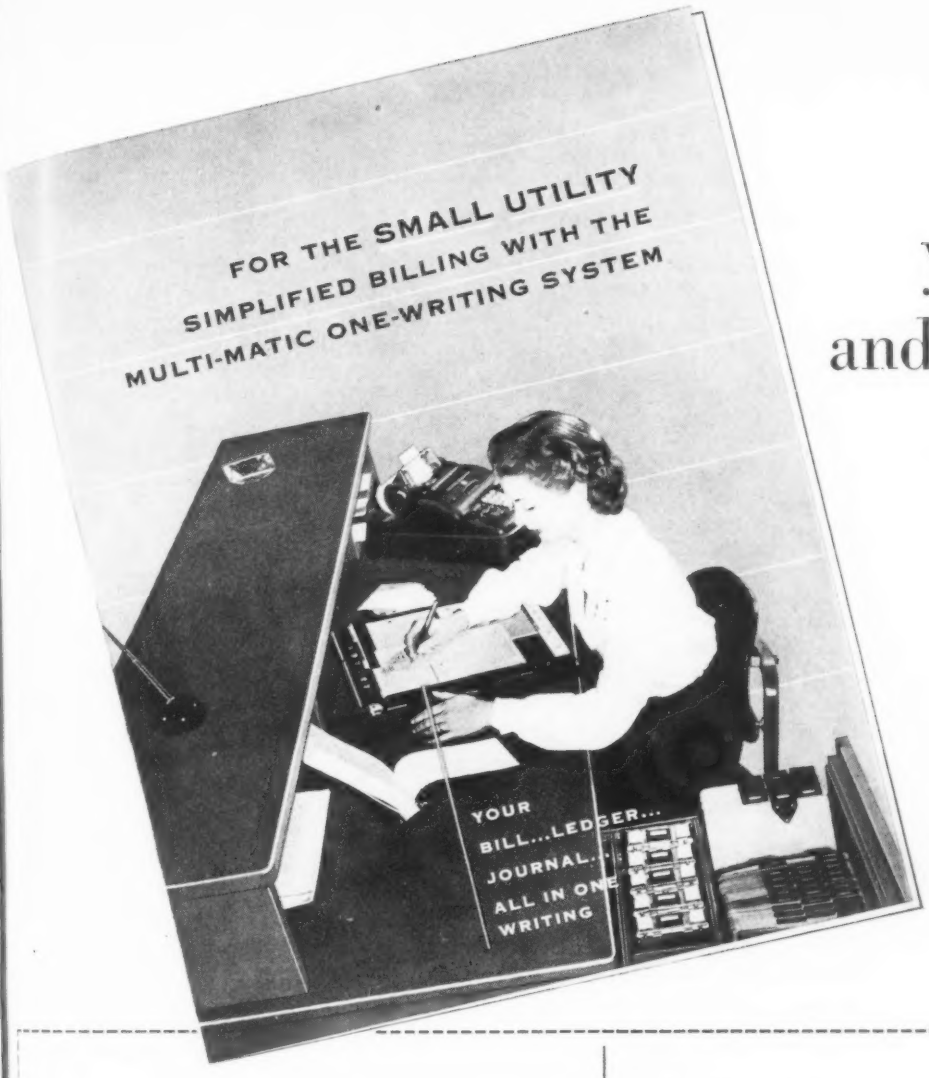
Unemployment Benefits Raised

Under the provisions of a new law now in effect in Nebraska, weekly benefits payable to idle workers under unemployment insurance have been increased $2.00 a week for each classification based on wages earned in last quarter. The minimum was upped to $8.00 and a maximum of $24 fixed.

V V

Georgia Rate Increase

The Crawfordville Telephone Co. was given authority to increase rates on Feb. 14 by the Georgia Public Service Commission.



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Summary of Commission Rulings and Hearings

California Public Utilities Commission

Feb. 26: Order issued granting temporary restoration of service to H. Griffin, Rosemead, regarding Pacific Telephone & Telegraph Co. discontinuance of service.

Feb. 26: Hearing on application of Roseville Telephone Co. for authority to issue 18,730 shares of common stock to pay indebtedness and to improve properties.

Florida Railroad and Public Utilities Commission

Mar. 27: Hearing on application of Southeastern Telephone Co., Tallahassee, for authority to increase intrastate rates.

Illinois Commerce Commission

Mar. 6: Hearing on application of Fairview Central Telephone Co. for authority to increase rates.

Mar. 6: Hearing on application of Middle States Telephone Co. of Illinois, Park Ridge, for authority to increase rates.

Mar. 6-8: Hearings on application of Illinois Commercial Telephone Co., Springfield, for authority to increase rates.

Mar. 8: Hearing on complaint as to alleged inadequate service, brought by City of Oblong, *et al*, vs. Illinois Consolidated Telephone Co., Mattoon.

Mar. 8: Hearing on application of Porterville Telephone Co., Annapolis, for authority to increase rates at Eaton, Annapolis and vicinity.

Kansas Corporation Commission

Mar. 6: Hearing on application of Clearwater Telephone Co. to buy and Viola Telephone Exchange to sell its properties at Viola and vicinity.

Mar. 13: Hearing on application of Reno Telephone Co. for authority to buy and A. P. Telephone Co. to sell properties at Abbyville and Plevna territory; and for authority of former to change rates and issue $30,000 of common stock.

Mar. 26: Hearing on application of Salemsborg Farmers Telephone Co., Smolan, for authority to change rates.

Apr. 2: Hearing on application of Cawker City Mutual Telephone Co., Cawker, and Ozark Township Telephone Co., Colony, for authority to change rates.

Apr. 9: Hearing on application of the Waco Telephone Co. for authority to operate in the eastern part of Cherokee County and southeastern part of Crawford.

Louisiana Public Service Commission

Mar. 8: Hearings on applications of Avoyelles Telephone Co., Kinder, and of Ringgold Telephone Co. for authority to change rates.

Mar. 8: Hearing on commission motion to investigate alleged unsatisfactory service rendered by Southwestern States Telephone Co., Brownwood, Tex., at Iota, La.

Mar. 8: Hearing on application of Breaux Bridge Telephone Co. for authority to increase rates at Arnaudville, Breaux Bridge, Cecelia and Parks.

Missouri Public Service Commission

Feb. 19: Hearing on application of Worth Telephone Co. for authority to increase rates.

Feb. 23: Hearing on application of Perl L. and Coy Dunn to sell and of Evelyn and O. A. Hutts to buy the Purcell Telephone Exchange.

New York Public Service Commission

Mar. 6: Hearing on application of Upstate Telephone Corp., Johnstown, for authority to increase rates.

Oklahoma Corporation Commission

Mar. 13, 14: Continued hearing on application of residents of Medford and other towns for free interconnection with the Southwestern Bell Telephone Co.

Wisconsin Public Service Commission

Mar. 7: Hearing on application of Wayside Telephone Co. for authority to increase rates.

V V

CED Tells Program To Hold Down Inflation

Steps to reduce the real causes of inflation must be taken if price and wage controls are to be reasonably effective, according to a national group of leading businessmen.

Pointing out that price and wage controls deal with symptoms of inflation rather than the underlying causes, the program committee of the Committee for Economic Development (CED) has outlined a course of action which it believes will prevent the "evil effects of inflation" from operating throughout the economy.

"The point we wish to make is a simple one," the CED declared. "The stability and productivity of the economy is dependent on our ability to bring total demand into a reasonable relationship to the supply."

The problem is two-fold as the CED sees it. It says, "we must increase production in every way possible and we must find ways to restrain demand. There are substantial possibilities for increasing production. We should bring women and older men into the working force. The work week can be lengthened, productive capacity can be expanded, productive techniques can be improved. We can increase our imports from other countries."

"Strong measures will be necessary to hold down demand," the CED committee declared. It outlined this program:

(1) *Drastic steps should be taken to reduce all government expenditures not clearly essential to the defense effort.* The federal budget for 1951-52 contains large sums for which the immediate need has not been demonstrated. Many state and local government expenditures can and should be postponed.

(2) *Taxes should be raised sharply and promptly to restrain consumers' expenditures as well as to increase revenues.* The goal should be a substantial cash surplus early in 1951 and at least a balanced cash budget in the second half.

(3) *The expansion of bank credit should be checked.* The $9 billion increase in bank credit to private and local government borrowers in the second half of 1950 was certainly a major factor in the inflation of that period. There can be no reasonable basis for confidence in the control of inflationary pressure if the expansion of bank credit and the resulting increase in the amount of money is not brought under control.

The Federal Reserve System, using its powers over the availability and supply of the banking system's reserves, can control the expansion of bank credit. It is of the utmost importance that this power be used to reduce inflationary pressure. This will require a modification of the present policy of using the government's monetary powers to maintain a stable market for federal government securities at low interest rates.

(4) *A national program to encourage savings should be inaugurated.* As part of such a program we should enlist the cooperation of the leadership that exists in our communities. The government should cooperate by instituting an aggressive campaign for the sale of savings bonds. The program should be more than a drive for savings bonds—all forms of savings should be encouraged.

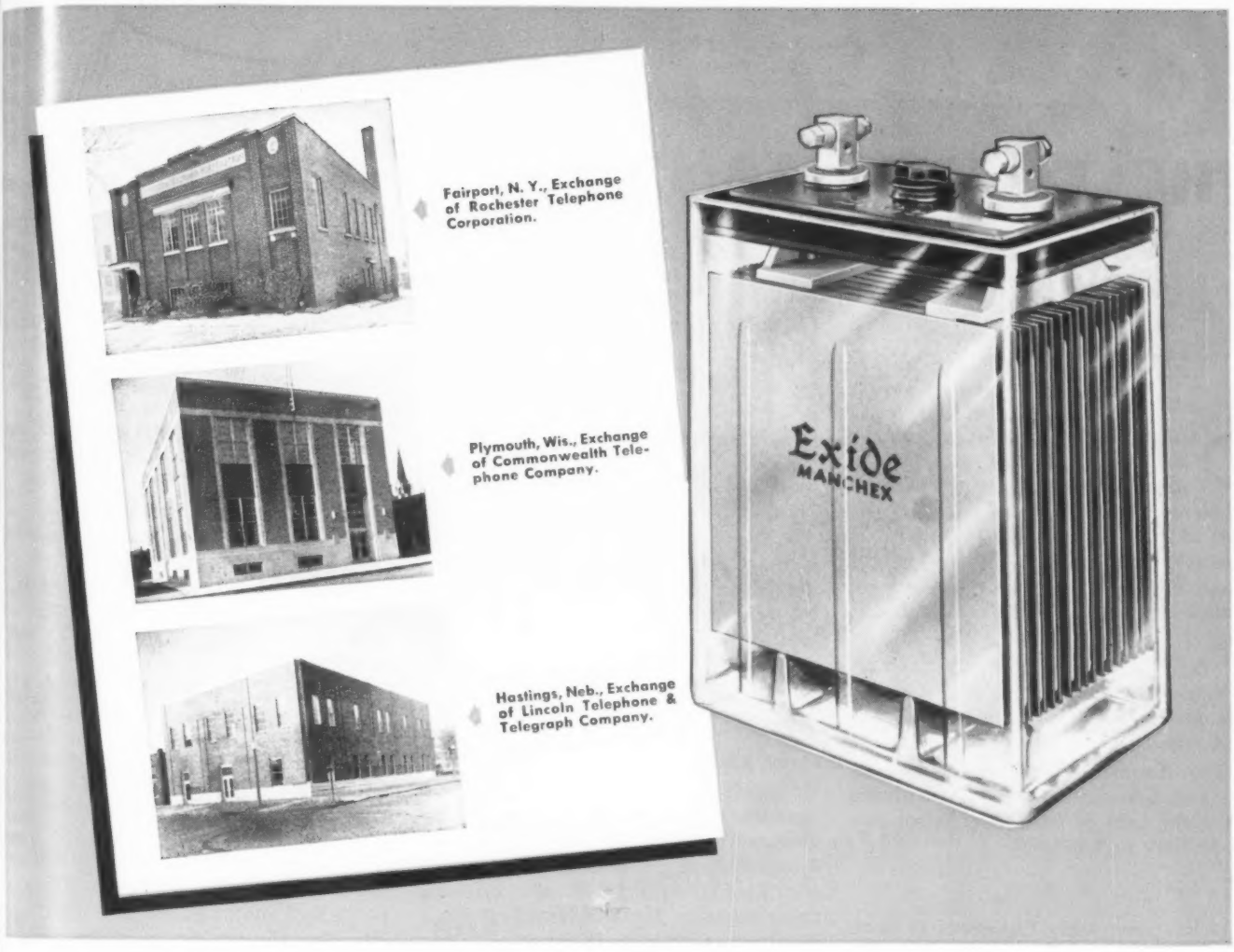
"In a country which enjoys the highest standard of living in the world," the CED says, "the burden of the projected defense program can be borne without serious hardship."

"Our educational, religious, social and economic institutions can do much to bring to the American people a greater sense of individual responsibility for preventing inflation."

Members of the CED program committee are as follows: Meyer Kestnbaum, *chairman of research and policy committee and program committee*, president, Hart Schaffner & Marx; Marion B. Folsom, *Chairman of board of trustees, CED*, treasurer, Eastman Kodak Co., John D. Biggers, President, Libbey-Owens-Ford Glass Co.; Gardner Cowles, president, Des Moines *Register and Tribune*, and Cowles Magazines, Inc.; Fred Lazarus, Jr., president, Federated Department Stores, Inc.; Philip D. Reed, chairman of the board, General Electric Co.; Beardsley Ruml, and J. Cameron Thomson, president, Northwest Bancorporation.

V V

>> To boost the "telephones in service" total 15,000,000 since the end of the war, telephone plant men have had to connect 40,000,000 instruments.


Fairport, N. Y., Exchange of Rochester Telephone Corporation.
Plymouth, Wis., Exchange of Commonwealth Telephone Company.
Hastings, Neb., Exchange of Lincoln Telephone & Telegraph Company.
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1888 . . . DEPENDABLE BATTERIES FOR 63 YEARS . . . 1951

THE PLANT MAN'S *note book*

BY RAY BLAIN TECHNICAL EDITOR

DURING 1950, the Bell companies added nearly two million telephones. This is twice as many as were added in 1940, and about three out of four telephones are now dial operated as compared to 59 per cent when World War II started. The long distance network was increased this year by a million and a half circuit miles.

Since the end of 1946, the network has grown from 16 to 27 million circuit miles.

The 250,000 telephones installed by the Bell System in rural areas brought the total gain in new rural telephones since 1945 to 1,500,000.

• • •

It has been said: "Business is more dependent on better men than it is on better machines. Machines move mountains, but initiative moves men."

• • •

The writer recently enjoyed a demonstration of a dialing device of foreign manufacture which is now being considered for fabrication in this country. This device is equipped with 50 code wheels which will call any one of 50, seven-digit numbers when the pointer is properly set and the lever depressed. The code wheels are equipped with 100 separate teeth which are nipped off by the use of a special set of pliers as required to arrange a code for pulsing any number desired.

If this device can be manufactured at a reasonable cost, it appears probable that its use will become rather extensive. It is believed that the average telephone user does not call more than 50 different numbers with any degree of frequency.

• • •

Chicago's famous Lighthouse for the Blind has been handling work for the Western Electric Co. on a sub-contractual basis for over 30 years. One of the products assembled there—drop wire clamps—is a familiar one to every Bell System outside plant man. Other Western Electric jobs handled capably by blind workers recently include jack and plug assemblies, and terminal block assemblies for dials.

Since many blind persons work at the Lighthouse for only a short time before they become skilled enough to be absorbed by private industry, it is a training school as well as a manufacuring plant. Not only are they taught to work, but to read Braille and to write, to travel on their own and to enjoy life in general.

"Blindness used to be regarded as a complete tragedy, and its victims were accepted as total dependents," says the director of the Lighthouse. "With Western Electric's help we are teaching these folks to think more about their ability than their disability."

• • •

Someone has said that a celebrity is a person who works all his life to become famous enough to be recognized, and then goes around in dark glasses so no one will know who he is.

• • •

A new type twin-helix earth auger, designed to fit all popular makes of power-driven earth boring machines by means of special adapters, is now on the market.

The double helix design provides two equal cutting areas, balancing the thrust so that the auger automatically stays centered in the hole and is not thrust against the side. The fishtail pilot bit on this auger gives superior performance in any kind of soil, particularly under rocky conditions.

All parts of the pilot bit are in motion when boring is taking place. This prevents pivoting on rock when rock is encountered, so that all of its cutting edges are cutting whenever the bit is turning.

This new auger is available in nine sizes for hole diameters to 36 ins. In addition to drilling ordinary earth, it is claimed that this auger will bore holes in hardpan, decomposed rock and some kinds of caliche and sandstone.

• • •

The Associated Circle, magazine of the Associated Telephone Co., Ltd., of Santa Monica, Calif., recently carried an interesting story of how its engineers devised a novel aerial underground cable installation.

This arrangement was developed in order that 900, 200 and 100-pair cables would clear a flood control channel being constructed by the U. S. Army Engineers across the underground cable run. Similar problems have been met by the Associated company by re-splicing the cables at the manhole nearest the construction project, setting special poles, and running catenary lines aerially over the project to connect at the nearest manhole on the other side of the flood control channel. In the case cited, it was estimated that this type of construction would cost at least $12,000.

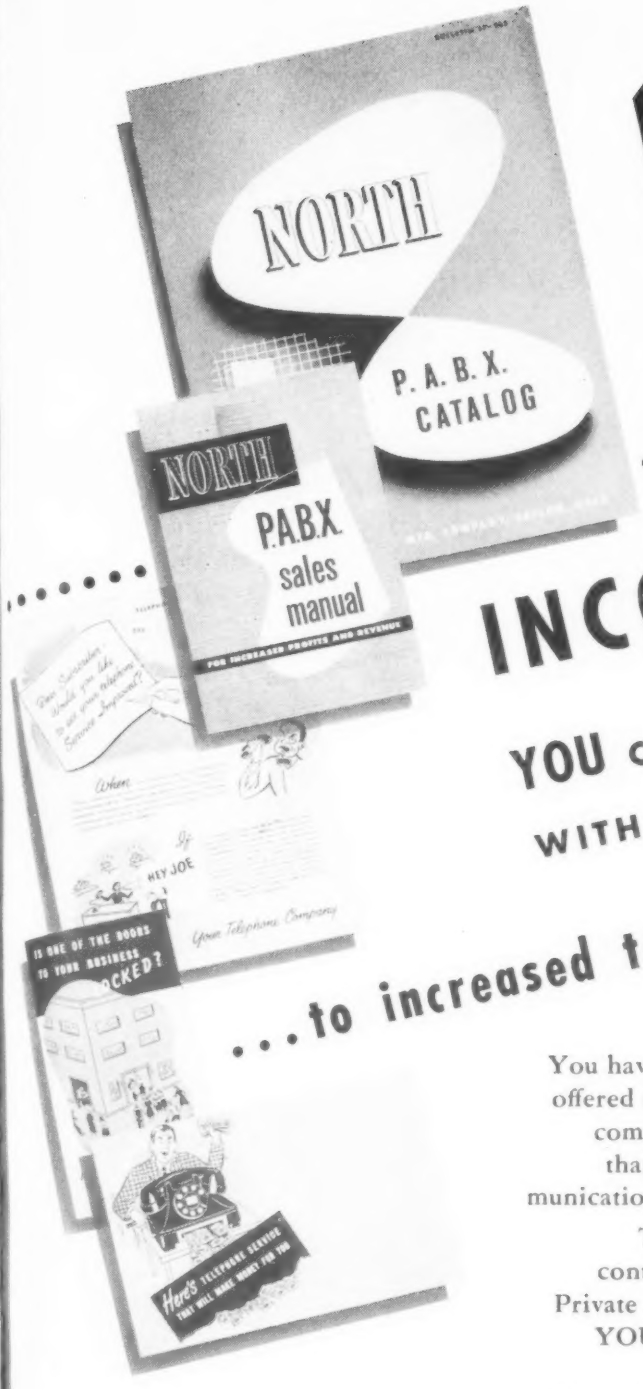
In order to avoid this expense, engineers determined that if the existing cables were temporarily raised five feet there would be 18 inches of clearance for the 14-foot reinforced concrete flood control channel being constructed. The conduit run was encased in plank and suspended from two A-frames by means of catenary construction. The operation was a success and afterward the cables were lowered safely into place on top of the concrete flood control conduit. Moreover, the new method saved $8,000 of the previously estimated cost of $12,000.

• • •

Lieut. Col. I. W. Gleason, formerly with the International Telephone & Telegraph Corp. in Greece, is now Executive Officer for the Signal Corps Plant Engineering Agency in Washington, D. C.

V V

>> The telephone industry in the United States has purchased nearly 60,000 new motor vehicles in the past five years.



up

INCOME PER LINE

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. . . to increased telephone business

You have for sale one of the most important services ever offered to factories, stores, offices and institutions in your community—improved business communication. Now that attendance personnel is harder to get, with communication traffic increasing—it is more important than ever.

The modern "miracle" which makes departmental contact faster, cheaper and more efficient is the North Private Automatic Branch Exchange. The way to increase YOUR business *without plant expansion* is to sell more P.A.B.X. service *on existing lines.*

We collaborated with the man who has sold more branch exchanges than anyone in the industry to prepare a complete sales kit . . . catalog, sales manual and mailing pieces. With these sales aids *anyone* can show business or professional subscribers how service to them can be improved, money saved, with installation of North P.A.B.X. A North man will help you sell if needed. Up your income per established line. Increase satisfaction of your subscribers.

write for yours today

THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of ***ALL RELAY*** *Systems of Automatic Switching*

1430 South Market Street, Galion, Ohio, U.S.A.

PLANT MAN'S QUIZ

Q. Please explain the most essential points to be observed in the use of a high voltage breakdown set in the location of cable trouble.

A. In general, the breakdown method should be used only in those cases where the fault resistance is too high to pass normal testing currents. This is usually over 2,000 ohms. It is possible to break down faults having a resistance as high as 50,000 ohms. When the fault resistance is very high, however, the fault may dry out and disappear when the high voltage is applied. In the case of a wet cable with several bad pairs, each of the affected pairs should be measured with an ohmmeter, and the pair with the lowest resistance selected for the breakdown attempt.

Ordinarily, the breakdown voltage is applied across the conductors of the selected pair having the high resistance short. Where a ground or a cross is involved, the high voltage should be connected to the crossed conductors or between ground and the grounded conductors.

Occasionally a cable pair is both grounded and shorted, crossed and shorted, or crossed and grounded. The high voltage should be applied across the shorted or crossed conductors. If a fairly solid short cannot be obtained when a conductor is crossed with, or shorted to another conductor, and it is also grounded, the high voltage should next be applied between one of the trouble pairs and ground. In this manner, it is possible to obtain a reasonably solid fault between crossed or shorted conductors or between a conductor and ground that will pass enough current to cause a breakdown.

The 450-volt breakdown voltage of the set consists of ten 45-volt B batteries connected together in series. An arc breaking switch is used to close the battery circuit. This switch is held normally open by a spring and is nonlocking. In the event of a heavy breakdown of the fault, this switch can be quickly opened by removing pressure on the switch button, permitting the switch contacts to snap open. This snap action extinguishes the arc that forms. The contacts of the arc-breaking switch are visible through a window in the top of the case. Any arcing or sparking at the contacts can thus be observed during the test.

In view of the high voltage produced by the breakdown test, extreme care must be observed in handling the equipment involved. Serious shock may result if exposed terminals or wires are touched during the test.

Before proceeding to connect the battery for the breakdown test, make certain that the jumpers at the main frame and the drops in the terminals in which the faulty pairs appear have been disconnected and that red warning tags have been attached to all involved pairs at proper locations.

• • •

Q. In our exchange, we have four grounded circuits which run parallel on the same pole line for several miles. These lines are noisy and crosstalk is quite bothersome. We have checked all grounds, but the trouble persists. Can you suggest a remedy for this trouble?

A. The use of grounded circuits is not generally recommended now. With power lines running through the rural areas, grounded circuits, in most localities, are so noisy as to be practically worthless. If you have checked these lines to make certain that all insulators are good and in place, that the lines are free of grounds, that trees are trimmed to give good clearance, and splices are all good electrically and mechanically, then you have done about all that is possible to be done. Perhaps the only certain method of correcting your trouble is to metallize all of your grounded lines. If you have power lines running parallel, even your metallic circuits must be properly transposed to provide good transmission.

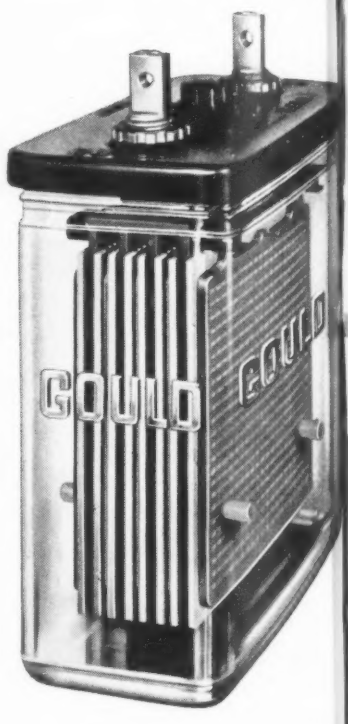
It is a good plan to make a careful study of all aerial lines and then select a system of transposition that best meets your particular needs.

• • •

Q. When poles must be set in soft ground to support a long span river crossing, what precautions must be taken in order to prevent the poles from settling?

A. One recommended plan is to place an anchor plank under the pole to give it greater bearing surface with the soft earth. This anchor plank should be made of two-inch creosoted timbers nailed together to form a plate 24 inches square and four inches thick. Galvanized nails should be used.

Larger plank anchors may be used, if required, where especially soft soil conditions are experienced.

Constructi
With the Doub
and Americ
gould planté.
the aristocrat of
stationary batteries


Many Planté batteries are still in activ
float service after twenty, thirty, even
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heavy, solid sheets of pure lead. In t
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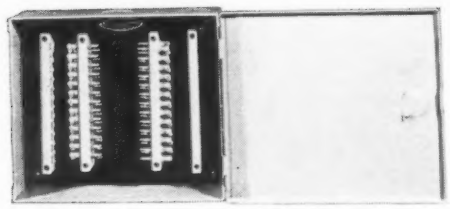
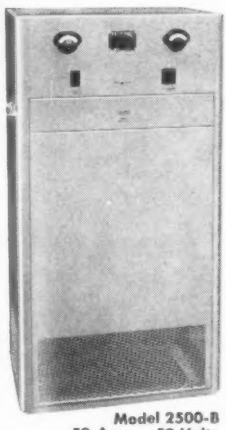


cook type "57" interior terminal box

The type 57 interior terminal box is for distribution and termination of lead-covered or loom cable for low-voltage circuits. The box itself which has Underwriters' Laboratory approval is constructed of smoothly enameled steel, with hinged cover and necessary knock-outs. Fanning strips and terminal strips are provided as well as screw connectors on the drop sides and solder clips for cable wires.

for 3-phase operation . . . be safer and surer with **flotrol automatic battery charger**



Model 2500-B
50 Amps., 50 Volts

Except for the starting and battery disconnect contactors, the FLOTROL does not contain any moving parts—an assurance of higher efficiency, complete dependability and longer service life. All components are in one cabinet and no special foundations are needed, reducing installation to a minimum. DC voltage delivered is regulated within ± 1%. Complete overload protection is as automatic as charging itself.

WRITE for Bulletin 161—completely describing the FLOTROL system for 3-phase operation.

ANSONIA Ankoseal

the modern, all-plastic, lightweight telephone cable . . .

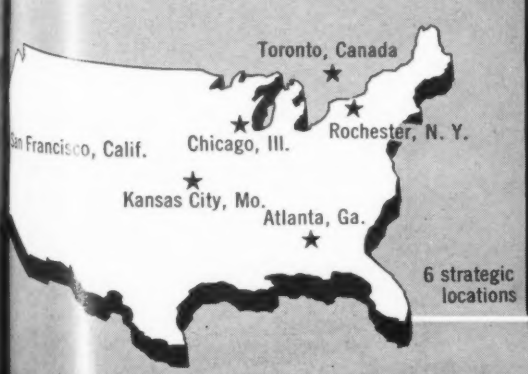
saves three ways—

1. Lower first cost
2. Lower installed cost
3. Lower maintenance cost

Available for aerial, duct and direct burial use. For complete information contact your nearest Stromberg-Carlson Field Office.

THE ANSONIA ELECTRICAL COMPANY

Subsidiary of Noma Electric Corporation
Ansonia, Connecticut



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Keep your POLES UP... and your COSTS DOWN!

Photo courtesy of The Southern New England Telephone Company

. . . with a combined OSMOPLASTIC INSPECTION and TREATING PROGRAM

WHY INSPECT POLES?

Sounds like a silly question, but how about your own pole plant? Are you able to say that you are certain that dangerous poles have been culled and replaced? Is decay progressing below ground in poles that look good from the seat of a car? The whole purpose of a pole inspection program is to keep you in a position to call the shots. Hit trouble before it hits you!

WHY GROUNDLINE TREAT?

Even the best pole inspection plan, by itself, serves as a front seat ticket to observing decay as it progresses. Why not do something about it at the same time? For the expenditure of less than 50c worth of material, you can arrest and prevent decay the Osmose way and keep a pole in place many years past the time it would have come up for replacement. Cut down zooming timber and changeover costs. Your inspection and treating program can pay for itself in first year savings!

SEND FOR THIS FREE KIT!

Write for our "First Aid Kit for Your Standing Poles." Contains all the data you need!

HOW TO GO ABOUT IT

Two-man inspection and groundline treating crews are usually adequate, and no special tools are required. Get full cost and procedure information by writing us, or contacting your representative of the

Kellogg Switchboard & Supply Company

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OSMOSE WOOD PRESERVING CO. OF AMERICA, INC.
1439 BAILEY AVENUE BUFFALO 12, NEW YORK

Transmitted Carrier

(Continued from page 17)

ates the dialing relay and shifts the westbound carrier back to normal frequency. The change in frequency operates the signal relay controlled by the discriminator at the west terminal which puts ground on the "E" lead. This permits battery current to flow in the trunk entering the automatic switching equipment in the west central office. The trunk is seized and dial tone is passed back into the west terminal carrier circuit drop to indicate to the operator that the switching mechanism is ready to receive dial pulses.

The west-to-east carrier is still on its off-normal frequency but the circuit is capable of perfect audio transmission and reception. The east operator hears the dial tone and proceeds to dial the required digits. Each pulse temporarily shifts the frequency of the east-west carrier to off-normal. The normal frequency corresponds to the makes and the off-normal frequency to the breaks at the calling dial or sender. The signaling relay at the west terminal reproduces these dial pulses and passes them along on the "E" lead to the west central office. After the dialing operations are completed the east-west carrier remains on normal frequency. The mechanism in the west office connects the incoming trunk to the called line and revertive ringing tone (or busy signal) comes back to the caller over the west-east band of the channel, with this carrier frequency still off-normal.

When the called party answers, battery voltage is placed on the "M" lead of the west terminal, causing the west-east carrier to shift to normal frequency. This shift places ground on the "E" lead at the east terminal, causing the operator's supervisory lamp to go dark. The two parties then converse with each carrier on its normal frequency. When the called party hangs up, battery voltage is removed from the "M" lead at the west terminal, allowing the west-east carrier to shift to its off-normal frequency. This shift takes ground off the "E" lead at the east terminal, allowing the operator's supervisory light to glow. The operator then withdraws the cord, removing battery from the "M" lead at the east terminal, and restoring the east-west carrier to off-normal frequency. This last frequency shift takes ground from the "E" lead at the west terminal, which in turn releases the

circuits in the automatic switchboard. The carrier channel is then in its standby position, ready for another call.

This type of transmitted carrier system enjoys the following advantages, as compared with suppressed carrier equipment:

(1) Neither synchronization of local and distant oscillators nor critical carrier leak adjustments are required.
(2) The carrier frequency signal can be traced through the entire system and measured easily when the channel is either in use or idle.
(3) Ringdown signaling can be accomplished in a simple and inexpensive manner.
(4) Receiving oscillators are not required.
(5) Voice frequency shift is eliminated.
(6) Neither additional pilot frequencies nor extra bands for dialing or signaling are required.
(7) The basis for an automatic circuit failure alarm is provided.
(8) A simple method of modulation, without use of transformers is made possible.
(9) Installation, testing and maintenance are greatly simplified.

Some 300 type No. 5 carrier systems, distributed over nearly all sections of this country, now are operating satisfactorily with a minimum of maintenance. Although some of these installations are on difficult lines where, previously, other carrier systems failed, very few troubles of any sort have been encountered. This indicates that a transmitted carrier system, designed and constructed as described, is particularly suitable for use on lines such as those most frequently employed in the Independent telephone field.

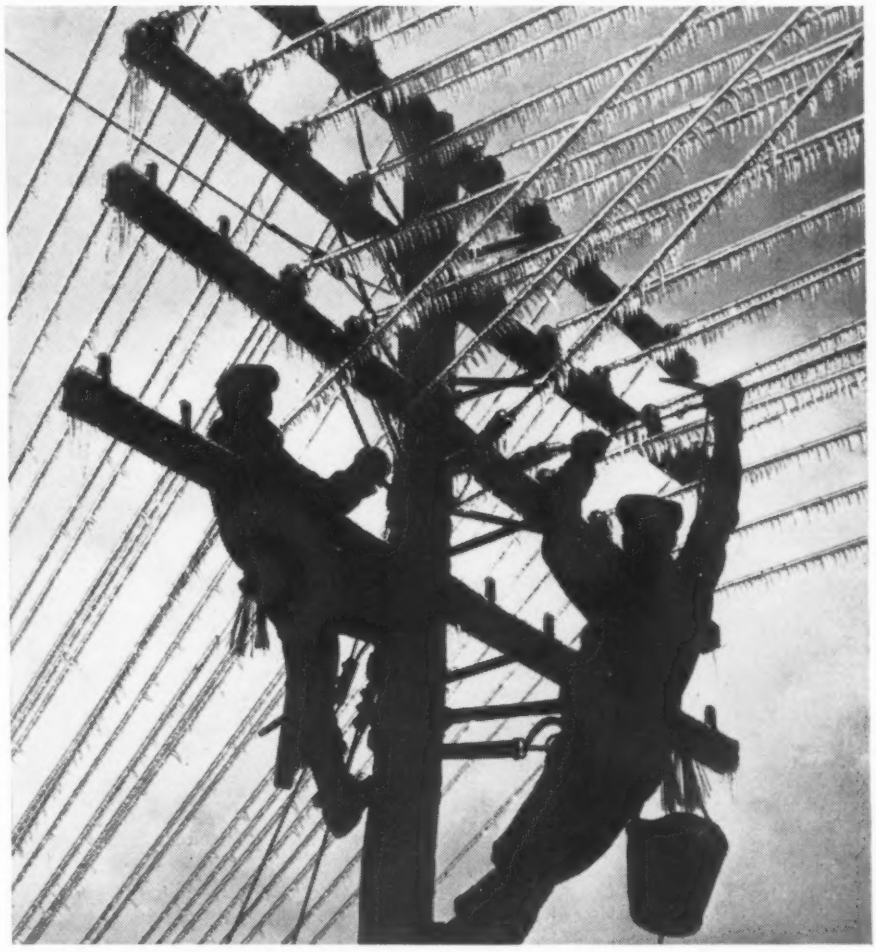
Back Road to Collectivism

"Most Americans do not believe in compromises with collectivism. But they do not realize that through governmental spending and taxes our nation is blissfully driving down a back road at top speed.

"In the end, these solutions of national problems by spending are always the same thing—power, more power, more centralization in the hands of the state. And along this road of spending the government either takes over, which is socialism, or dictates institutional and economic life, which is fascism.

"We have not had great socialization of property, but we're on the last mile to collectivism through government collection and spending of the savings of the people."—*Herbert Hoover.*

A Dangerous Job Made Safer



WITH KOPPERS PRESSURE-CREOSOTED POLES!

WORKING on lines that are crusted with ice—that's no picnic for linemen. And they don't want the additional hazard of working on poles that have been weakened by shell rot.

Koppers Poles are pressure-creosoted against decay for their full length. They *stay* sound and strong. Besides being safer for linemen, these strength-retaining poles last longer—in fact, the average life is better than thirty years.

For safer poles—for longer-lasting poles—specify Koppers. Deliveries of Koppers Full-Length Pressure-Creosoted Poles are made from many conveniently-located treating plants.

KOPPERS

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

PRESSURE-CREOSOTED WOOD

75 Years of Service

(Concluded from page 26)

turning again to defense, Bell and Independent telephone companies stand ready and able to do their part. Over the still growing network of telephone lines, the messages of defense are starting to flow from factories, camps and government offices. As air defense nets are readied, telephone lines again crackle with the urgency of words of warning.

The steady march of progress in the telephone industry since that historic night 75 years ago has been in no small part due to the atmosphere of freedom in which the telephone grew up. Throughout the telephone's brief history, the men and women who have provided this essential service have striven constantly to make it ever more useful and more valuable to more people. They have been able to build so much so well because the people of America have given them the resources, the encouragement and responsibility they needed to do the job. In this climate of freedom and responsibility, the industry, during its anniversary year, looks forward to providing telephone service better and more valuable in the future than at any time in the past.

V V

Wage Stabilization Board Has Question And Answer Series

A series of questions and answers on the most important points of interpretation that have been raised under the five general regulations issued by the Wage Stabilization Board was released on Feb. 15.

W. Willard Wirtz, executive director of the board's staff, said that hundreds of queries asking for rulings on particular points in the five regulations had been received. This set of questions and answers is designed to assist persons who have basic problems under the regulations and to indicate the pattern of rulings to date.

The set of answers is also being forwarded to the regional and district offices of the Wage and Hours and Public Contracts Division of the U. S. Department of Labor, which are currently answering queries for the board. Mr. Wirtz urged companies and unions to take their queries to these regional offices instead of calling or writing to the National Board in Washington, D. C.

V V

General To Issue 225,000 Shares of Common Stock

General Telephone Corp. recently filed with the Securities & Exchange Commission a registration statement covering 225,000 shares of common stock, $20 par value. The price will be filed later by amendment. Subject to clearance by the SEC, it is expected that the shares will be offered to the public around Mar. 20 by an underwriting group headed by Paine, Webber, Jackson & Curtis, Stone & Webster Securities Corp., Mitchum, Tully & Co.

Proceeds from the sale of this stock will be used by the corporation to pay $1,350,000 borrowed from banks in connection with the acquisition of Leich Electric Co. and Leich Sales Corp., to make additional investments in the common stocks of its subsidiaries and to make temporary advances to subsidiaries in connection with their 1951 construction programs.

For several years the corporation's subsidiary operating companies have been engaged in large construction programs to meet demands for increased telephone service. These demands continue, and the construction programs for the year 1951 as originally planned indicate gross additions to plant of $65,163,000, resulting in net plant additions of about $47,628,000.

Such construction consists principally of replacements, improvements and extensions of facilities and includes conversion of a number of exchanges from manual to dial operation. It is anticipated that governmental limitations on materials will reduce the construction programs to an extent not now known or ascertainable, but despite such limitations the programs will probably be large. General system companies now own 1,306,400 telephones, of which 62 per cent are dial.

V V

>> When you find a person a little better than his word, a little more liberal than his promise, a little more than borne out in his statement by facts, a little larger in deed than in speech, you recognize a kind of eloquence in that person's utterance not laid down in Blair or Campbell.—Oliver Wendell Holmes.

• • •

>> Pull off the road to change a flat and save your life—there's no spare for that.

Cut Earth Boring Costs WITH THE PENGO EARTH AUGER

A scientifically-designed double helix auger that:

★ Bores in any kind of soil, hardpan or decomposed rock

★ Bores clean, straight holes of the specified diameters—saves concrete

★ Saves power, minimizes wear and tear on your earth boring machine

★ Eliminates repair trips to shop... hard-facing expense

"You'd be surprised where the PENGO Auger will bore!"

"THE MOST PROFITABLE TOOL YOU EVER BOUGHT". Order a PENGO for your present machine . . . *specify* PENGO augers with your new machine.

Available in nine diameters to 36" (actual HOLE sizes) for use with all popular makes of earth boring machines.

ORDER TODAY . . . OR SEND FOR LITERATURE, PRICES

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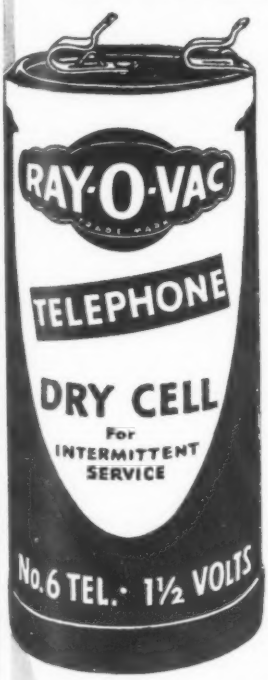
Built to last longer!



- Fewer replacements
- Lower operating costs
- New package design

Ask for

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TELEPHONE DRY CELLS
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- Neoprene Hood (Oil and Chemical resistant)
- Shatter-Proof Plastic Lens
- Sturdy Fiber-Covered Brass Barrel
- Easily Replaceable Switch (saves on repairs)
- Protective End Cap

Over one billion sold

For Flashlight Batteries

. . . depend on RAY-O-VAC LEAK-PROOF Batteries. They give lasting power because they're SEALED IN STEEL . . . *guaranteed* against flashlight damage through corrosion, swelling or sticking!

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RAY-O-VAC COMPANY, LTD., WINNIPEG, MAN.

FOR WELL-ROUNDED PERFORMANCE . . .

KENNECOTT CABLE

Many things are expected of quality cable . . . that it should give long-lasting service and dependable performance under both normal and adverse conditions. Kennecott Telephone Cable meets these requirements and more.

Information regarding Kennecott Telephone Cable is available at any of the Chase Brass Sales Offices listed below.

Chase Brass & Copper Co. is an affiliate company of Kennecott Wire and Cable, with 27 sales offices (23 of them warehouses) in leading industrial centers from coast to coast.

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WATERBURY 20, CONN. • DISTRIBUTOR FOR

KENNECOTT WIRE & CABLE CO.

SUBSIDIARIES OF KENNECOTT COPPER CORPORATION

ALBANY† ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DENVER† DETROIT HOUSTON† INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES

MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY

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Looking for savings in underground duct systems?

1. Save installation costs—Lightweight; long lengths; easy to assemble, saves time and labor.

2. Save cable installation costs—smooth bore permits easy cable pulling—reduces abrasion.

3. Save maintenance costs—Non-metallic; immune to electrolysis—prevents cable corrosion.

4. Save replacement costs—Inorganic; resist acid or alkaline soils; high mechanical strength—permanence.

5. Save fire damage costs—Fireproof because they are asbestos-cement products.

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TRANSITE DUCTS
Conduit—for use without concrete envelope
Korduct—for use with concrete envelope

LOADING COIL CASES

Western Electric 204 CG Equipped with 12 (6E-6W) SM 11 units.

(88 millihenry side circuits—50 millihenry phantom circuit)

#19 ga. lead cable stub attached.

NEW in original factory crates, guaranteed perfect, (10 only) offered at a small fraction of original cost shipped subject to your approval.

Photo or more complete description on request.

THE Telectric CO.

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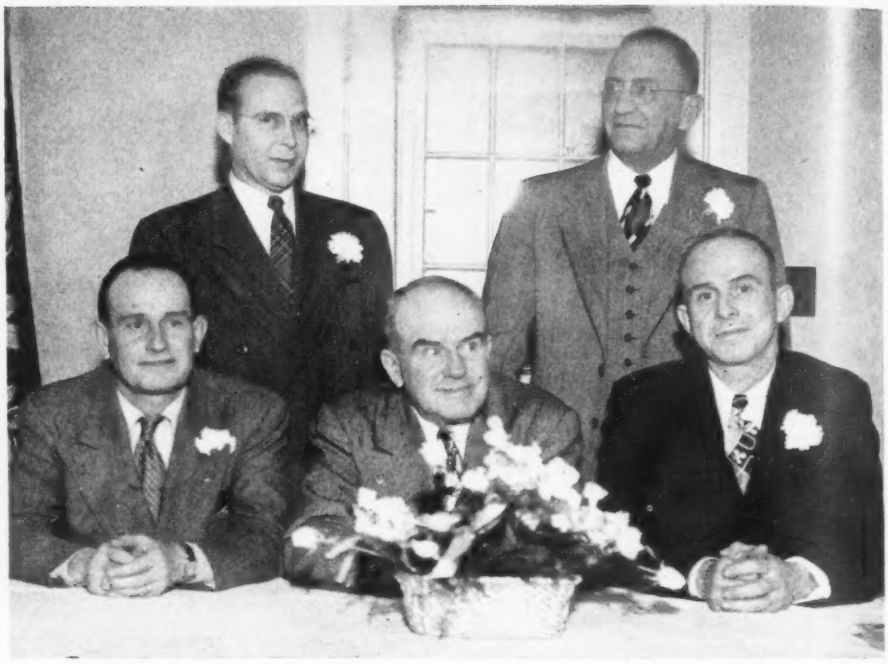

Photographed at the banquet honoring the 50th anniversary of Eugene Kelley's association with the telephone industry and marking the installation of Strowger automatic equipment at Waterloo, Ind., are seated, left to right: ALFRED, EUGENE and GRANT KELLEY. Standing, left to right: W. T. LAWRENCE, staff engineer, and CARL SNYDER, sales representative, Automatic Electric Sales Corp., Chicago.

EUGENE KELLEY HONORED ON 50th ANNIVERSARY

ON JAN. 22, 1951, a number of telephone men and women and local civic leaders gathered together at the Shamrock Inn, Waterloo, Ind., to celebrate two important events: One was the 50th anniversary of Eugene Kelley's entry into the telephone business, Mr. Kelley representing the second of three generations that have built the modern Waterloo Telephone Exchange; the second was the recent conversion of the exchange to Strowger automatic operation.

Waterloo's first switchboard, serving 35 subscribers, was installed in 1899, by Alfred ("Ab") Kelley. Eugene, his son, became active in the exchange soon after that, doing much of the outside plant work, and in 1911 he took over the operation of the company upon the death of his father. For the past 25 years, Eugene's two sons, Alfred and Grant, have been working with the company.

Plans for the installation of Strowger automatic equipment were first considered several years ago, but World War II delayed action. Eventually a long-range rehabilitation program was put into effect, and in 1949 the company erected a new fire-proof building of steel, tile and glass brick. Last year the automatic central office equipment was installed and the last rural line cut over on Jan. 13 of this year. The exchange serves approximately 500 subscribers.

At the anniversary dinner, E. J. Ford, assistant vice president of The Home Telephone & Telegraph Co., Fort Wayne, Ind., served as toastmaster; William H. Beck, secretary-treasurer of the Indiana Telephone Association, made the principal address of the evening; Don E. Van Fleit, manager of Garrett (Ind.) Telephone Co., and president of the northeastern district of the Indiana Telephone Association, presented Eugene Kelley with a beautiful table lamp on behalf of his former operators; and Mrs. Mary Kock, a former chief operator, expressed the appreciation of former operators for the splendid consideration they received as employes of Mr. Kelley. Eugene Kelley himself spent a few moments reminiscing, Alfred Kelley conducted a tour of the exchange, and Grant Kelley presented each former operator with a corsage.

V V

>> The Soviet Union has the lowest per capita national income of all industrialized and semi-industrialized nations of the world except Poland. It is $308 annually in United States dollars.

In the Nation's Capital

(Concluded from page 14)

there are adequate remedies to use against employers violating the restrictions.

Referring to the nation-wide bargaining proposal, Taft's dissent stated that "nation-wide bargaining should not be imposed on the telephone industry until and unless the whole subject of such bargaining and concentration of power and control in the labor field is studied and more effectively regulated than at present."

REA Seeks More Telephone Loan Funds

Last week REA Administrator Wickard appeared before the Senate Agriculture Sub-committee seeking more telephone loan funds than President Truman's budget originally proposed. It will be recalled that this was a mere $9,000,000 for the coming fiscal year. REA would like to add some $5,000,000 in "carry-over" funds, which it probably will not be able to allocate for rural telephone loans this year.

If Congress adds this amount, REA would have about $14,000,000 for the coming year. REA also has cast a wistful eye on that $19,000,000, which has been impounded out of REA's regular appropriation since the "economy" slashes of last fall. Congress might go along with the suggestion to add "carry-over" funds.

But REA's main trouble is likely to be finding materials and manpower to permit the authorization of loans for new farm construction work. The real concern of REA, of course, is the need for keeping its telephone loan organization intact. If REA is forced to let this work run down hill—or drop to zero—for the period of the present emergency, Congress might not be in the mood to revive it at all when happier days are here again.

Emergency Controls Note

All of the nation's major communication wire manufacturers — eight in number—have been called for a meeting in Washington, D. C., on Mar. 15 by the communications division of the National Production Authority (NPA). Plans for reducing wire sizes, and other material short cuts, will be proposed by NPA. An industry advisory group is also likely to be formed to help control machinery.

Meanwhile, a special telephone industry task force is studying a plan for increasing the amount of materials which can be obtained, under automatic NPA priority, for operating "MRO" (maintenance, repair, and operation) supplies. This order was issued for all business enterprises on Feb. 26. This NPA "Regulation 4" is to keep the nation's producers of goods and services operating without danger of shutdown or breakdown. Such concerns may use the priority rating "DO-97" to procure necessary equipment and supplies. Each quarter "MRO" expenditures, however, cannot exceed the dollar value of such purchases during 1950.

V V

"The welfare state, like Topsy, has 'growed' to where it is about ready to engulf us. What started out as a noble idea has come to be a monster which is used politically and which is lost in a wilderness of red tape and bureaucracy."—Bushnell (Fla.) *Times*.

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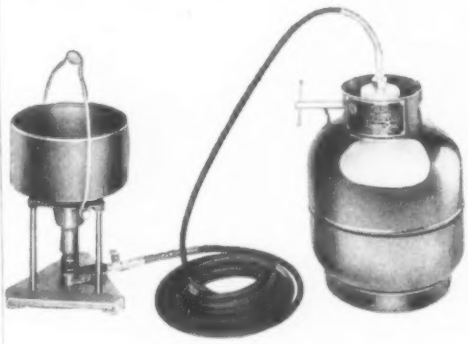

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